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NOTE ON THE EARLY HISTORY OF CANADA BALSAM.

By Professor Flückiger.

In the short article devoted to the above drug in my "Pharmakognosie des Pflanzenreiches," Berlin, 1881, p. 70, I availed myself of the opportunity of completing its history, being kindly assisted in my investigation by my friend, Dr. *Charles Rice*, of New York, as well as by Mr. *Wm. Saunders*, of London, Ontario. I am indebted to the latter for the following information, as met with in *Boucher's* "Histoire de la Nouvelle-France," dated October 8th, 1663, "de la Ville des Trois-Rivières en la Nouvelle-France." The author states: "Il y a des sapins comme en France: toute la différence que j'y trouve c'est qu'à la plus part il y vient des bubons à l'écorce qui sont remplis d'une certaine gomme liquide qui est aromatique, dont on se sert pour les playes comme de baûmes, An'a pas gueres moins de vertu." In English: There are pines or firs like those in France, except that they have little swellings in the bark, which are filled with a certain aromatic gum; this has been found as useful for wounds as the balsams. I need scarcely point out that similar swellings or resin ducts are also met with, in France, in the bark of Abies pectinata. See "Pharmacographia," 2d edit., p. 615.

This is a very plain information, which, however, does not refer to the earlier period of the French settlement in Canada. I therefore tried to consult some earlier accounts of the French explorations in that country. I had not before me that of *Jacques Cartier*, of Saint-Malo, who in 1535 and 1541 paid a visit to Canada, and reached the place of the present city of Montreal. Cartier's journey was very short, and his accounts too meagre as to be expected to contain any allusion to the Balsam under notice. A thorough exploration of Canada and the foundation of the colony was due, from A. D. 1601 to

1635, to *Samuel Champlain*, a very active and intelligent officer of the French navy. His accounts being not at my disposal I referred to those of *Marc Lescarbot*, who visited Canada in 1606, and wrote in 1612 the "Histoire de la Nouvelle-France, contenant les navigations, découveries et habitations faites par les François és Indes Occidentales et Nouvelle-France," etc. There is a reprint of the original edition, published in 1866, at Paris, by *Edwin Tross*, 3 vols. In the third volume of this recent edition there occur the following statements:

Page 805: The author mentions excellent bricks to have been made of Canadian clay, the bricks being used for constructing chimneys and furnaces, the latter intended for melting the *gum of pines* ("fondre la gomme de sapin"). This may as well refer to the solid resin of Coniferæ, yet at page 811 mention is made of the healing virtues of the resin, *i. e.*, no doubt, the turpentine or balsam: ". . . Et sur le propos de guerison il me souvient d'avoir ouï dire au Sieur de Poutrincourt qu'il avoit fait essay de la vertu de la gomme des Sapins de Port Royal." And, still more explicit, page 820, *Lescarbot* says that the pines of Canada are very rich in gum, so that some of them die on account of its too large quantity. This gum he found to be *as fine as that of Venice, and quite excellent in pharmacy.* He furnished some churches in Paris with it, and was told that it made a very good incense, or, in his own words: "De bois exquis je n'y sache que le Cedre et le *Sassafras:* mais des Sapins et Pins, se pourra tirer un bon profit, parce qu'ils rendent de la gomme fort abondamment, et meurent bien souvent de trop de graisse. Cette gomme est belle comme Térébenthine de Venise, et fort souveraine à la Pharmacie. J'en ay baillé à quelques églises de Paris pour incenser, laquelle a esté trouvée fort bonne."

Sassafras, it may be observed, is mentioned here, apparently, as a timber; it is now in Canada, as far as I know, rather bushy than a strong tree, which would be able to yield any timber wood. As to the perfume of the turpentine of Canada, as displayed in the churches of Paris, we may mention that Monsieur Lescarbot was not a naturalist, but an advocate.

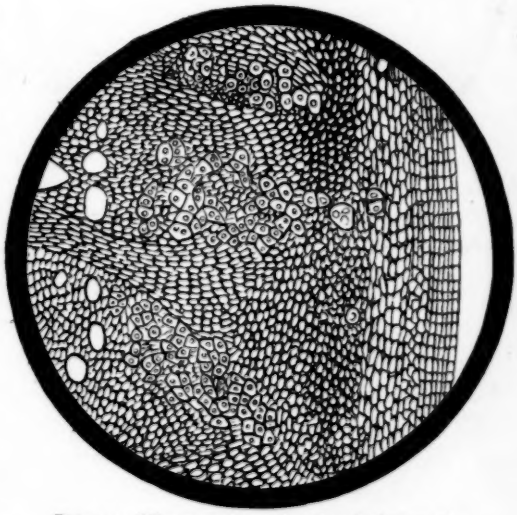
RUBUS VILLOSUS.

By Chester Johnson, Ph.G.

From an Inaugural Essay.

This plant belongs to the natural order of Rosaceæ, and, though considered to be of little importance medicinally, it presents many characteristics which cannot fail to be deeply interesting to the botanical student. It is an upright, shrubby perennial, growing in rough pasture lands and thickets, throughout the eastern part of the United States from Maine to South Carolina, and it is universally known as *High Blackberry.*

Its flowers, consisting of five white rounded petals and numerous stamens, occur upon the irregularly branched stem in more or less elongated racemes, and produce a black multiple fruit, which ripens in August or September. The stem is longitudinally ridged, and armed with stout downward curved prickles.

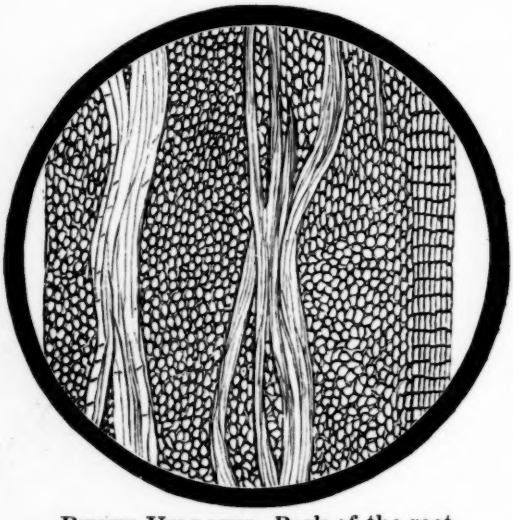


Rubus Villosus. Bark of the root. Transverse section, magnified 150 diameters.

The leaves are slightly pubescent beneath, alternate and of a darkish green color; their general shape is ovate, with an acute apex and an unequally serrate margin. The prickles grow along the midrib and down the petiole, which is nearly the length of the leaf. All intermediate gradations are found between the single and the compound leaf of five leaflets, the five-divided being produced from the three-divided by lobes appearing upon the base, and becoming more deeply incised, so as to form a new set of leaflets.

The root varies from the one-eighth of an inch in diameter to the thickness of the little finger, and contains a tough, ligneous medituldium. The bark, in which the virtues wholly reside, is of a gray-

brown color externally, and of a darker brown in the intermediate layer, and is slightly wrinkled. A longitudinal section of the bark shows the fibrous or bast tissue, which makes it very tough and strong, although it can be torn in the direction of the fibre with comparative ease. The cross section presents the medullary rays and the wedge-shaped bundles of bast tissue. The epiphlœum consists of about six or seven layers of tabular cells, and the meditullium is quite porous from the numerous ducts. The bark is found in commerce peeled from the inert woody portion.



RUBUS VILLOSUS. Bark of the root. Longitudinal section, magnified 150 diameters.

Rubus villosus is also interesting from the fact that upon the leaves is found a minute fungus, to which Schweinitz gave the name *Æcidium nitens*, described in his "Synopsis Fungorum Carolinæ Superioris" as growing upon the leaves, petioles and young branches of the entire genus. To the naked eye its appearance is that of an orange colored rust, but when magnified one hundred and fifty diameters it is found to consist of a large number of roundish granular bodies, which appear about the size of a pea, and are of a light orange or sometimes a deep crimson color. They are attached to the hairs, and are found more plentifully on the under surface of the leaves, these parts often becoming so thickly covered as to give to the plant an autumn tint or sunburnt appearance.

By cultivation Rubus villosus acquires the habits and appearance of an ornamental shrub, some of its numerous stamens becoming petals, and the flowers increasing in size; though by "trimming back" the new growing branches the amount and size of the fruit can be greatly increased.

Tannin is the principal constituent of the root bark. The leaves also contain this acid in a small amount, and the pleasant acidulous taste of the fruit is due to the presence of citric and malic acids.

ON PHYTOLACCÆ RADIX.

By William F. Pape, Ph.G.

From an Inaugural Essay.

A quantity of the root was coarsely powdered and treated with benzol until the last of the percolate left no residue upon evaporation. This extract was allowed to evaporate spontaneously, treated with 80 per cent. alcohol, which removed coloring matter and a small amount of resin. The part insoluble in alcohol was a dark brown oil, which, upon being mixed with potassic hydrate and sodium chloride, formed a saponaceous mass; the oil dropped on paper left a permanent greasy stain. Benzol extracted about ·8 per cent., of which ·4 per cent. was oil.

The root, after treatment with benzol, was completely exhausted with 95 per cent. alcohol; this extract was concentrated by distilling off the greater portion of the alcohol, and, upon standing, deposited a considerable quantity of colorless crystals, which had a saline and cooling taste; the crystals obtained as pure as possible, heated on platinum foil, fused to a colorless liquid, and congealed again on cooling. They were neutral to litmus paper, dissolved freely in water, but only slightly in alcohol, imparted a violet color to the flame, and proved to be potassium nitrate.

The concentrated alcoholic extract has a sweetish, then acrid taste and an odor similar to that of conium leaves. This extract is of a dark reddish-brown color by transmitted light, and of a beautiful green by reflected light. It was carefully evaporated to dryness, treated with absolute alcohol, specific gravity ·793, and filtered. The filtrate was evaporated to dryness, treated with water, filtered and the filtrate precipitated by solution of subacetate of lead; the precipitate was collected on a filter and washed with water, then suspended in water and the lead removed by passing sulphuretted hydrogen gas into it and filtering; the filtrate was boiled to drive off sulphuretted hydrogen. This solution gave a blueish-black coloration with a solution of ferric chloride, and a whitish gelatinous precipitate with gelatin, showing the presence of tannin. The portion soluble in water, but not precipitated by solution of subacetate of lead, was freed from lead and tested for alkaloids and glucosides. By adding iodo-hydrargyrate of potassium to the solution a whitish precipitate formed, and upon adding a solution of iodine and iodide of potassium to another

portion of the solution it gave a reddish precipitate. These tests indicate the presence of an alkaloid.

The extract insoluble in water was treated with diluted hydrochloric acid, which removed such a small quantity that it could not be examined. The mass insoluble in diluted hydrochloric acid, when treated with diluted ammonic hydrate, was entirely dissolved; hydrochloric acid added to this solution caused a precipitate, showing it to be an acid resin; it has a very acrid taste.

The portion insoluble in absolute alcohol was treated with water, in which it was entirely soluble. To this liquid a solution of subacetate of lead was added; the precipitate was collected on a filter, washed and freed from lead. This solution consisted of some coloring and extractive matter. The filtrate was freed from lead and tested for alkaloids, glucosides and sugar, but none could be detected excepting sugar.

Alcohol added to a decoction of the root gave a jelly-like precipitate, showing the presence of gum. An aqueous solution of iodine and iodide of potassium gave the reaction for starch.

On incineration, the root yielded 10·73 per cent. of ash, of which 66·35 was soluble in water, 24·96 per cent. soluble in hydrochloric acid, and 6·71 per cent. consisting of silica, soluble in hot solution of sodic hydrate, the rest being sand. The ash contained potassium, calcium and iron, combined with chlorine, sulphuric and phosphoric acids.

According to this analysis poke root contains the following organic principles: Gum, starch, sugar, tannin, fixed oil, coloring matter, acid resin, and possibly an alkaloid, the exact nature of which has not been ascertained.

PHYTOLACCÆ BACCÆ.

By Walter Cramer, Ph. G.

From an Inaugural Essay.

Phytolacca decandra is indigenous to North America, but perfectly naturalized in Southern Europe, and is known under the names of poke, garget, scoke and coakum.

The berries are about one-third inch in diameter, flattened globular in shape and consist of ten concentrically arranged carpels, each of

which contains one black and glossy seed. The thin pericarp is of a blackish-purple color and contains a dark purplish-red juice. The berries are inodorous and have a disagreeable, mawkish and somewhat acrid taste. When dried on the stalk, they resemble raisins in their appearance and for this reason were called American raisins when introduced into Europe.

A proximate analysis of the berries was undertaken, having as its first object the ascertainment of the nature of the coloring matter. Several pounds of the fresh, ripe berries, freed from peduncles and pedicles, were subjected to pressure until entirely deprived of their purplish-red juice. To it a solution of acetate of lead was gradually added until all of the color was precipitated. The precipitate was collected on a filter and the filtrate, freed from the excess of lead, was found colorless as well as tasteless. It was evaporated to one-tenth of its bulk; on boiling it did not gelatinize, nor give a precipitate on the addition of alcohol; alkaloid tests gave no reaction, but Fehling's test proved it to contain considerable sugar.

The lead precipitate, after being well washed, was suspended in water and a stream of sulphuretted hydrogen passed through it. The sulphide of lead was collected on a filter, but the filtrate, which was expected to be a solution of all the dark-red coloring matter originally contained in the juice, was only of a very light red color. What became of the large quantity of color was and is a mystery. Certainly none of it adhered to the sulphide of lead, for this was well washed with hot water and then with alcohol and the washings were found colorless. In order to be more convincing, the same experiment was tried a second time, but with a larger quantity of juice, and gave the same results—the red color disappeared under the experimenter's hands, but gave no clue to the direction of its exit.

Making, therefore, no further investigation in regard to the coloring matter, the filtrate—which had caused such sad disappointment—was evaporated to an extract; it was soluble in water; the solution, when boiled, did not gelatinize, but the addition of alcohol gave a precipitate which, when dissolved in a small quantity of water and evaporated, did not crystallize nor show any action with the alkaloid tests, and was therefore probably gum.

To the remainder of the extract ether was added, the mixture well stirred, the ethereal solution decanted and allowed to evaporate spontaneously, when, after twenty-four hours, some fine needle-like crys-

tals were found on the bottom of the vessel. They gave an acid reaction with litmus and were of a strongly acid taste. They were dissolved in a small quantity of water and freed from the trace of coloring matter adhering to them by passing through animal charcoal. To the solution lime water was added and no precipitate formed; on the addition of alcohol to the mixture a white precipitate was formed, and this was taken as presumptive evidence that the crystals contain malic acid. In order to obtain positive proof, the precipitate, supposed to be malate of calcium, was dissolved in water and a few drops of solution of acetate of lead added; the precipitate thereby formed was collected on a filter, dried, and then boiled in a test tube with acetic acid. It was entirely soluble; and, on cooling, separated in small needle-like crystals, proving it to be malate of lead.

The washings of the lead precipitates were freed from lead and found to contain gum, sugar and a little coloring matter, and the washings of the sulphide of lead nothing.

The results of the analysis show that the juice of pokeberries contains gum, sugar, malic acid and a coloring matter which, on account of its susceptibility of change, makes a closer investigation difficult.

The cake left in the press, after all the juice and red color had been extracted from it, was dried, powdered and percolated with 90 per cent. alcohol. The tincture was of a green color and, on evaporation, the residue was found to consist of a dark-green resin, entirely insoluble in water, and a yellow gummy matter, insoluble in alcohol but soluble in water. The two products were not further examined.

Five hundred grains of the fresh, ripe berries, freed from their pedicles, were set aside in a protected place at a temperature of about 70° to 75°F. After twenty days, they weighed 226 grains, after thirty-five days 176, when they were found to be air-dry, as they had lost no more in weight when tested ten days later. They were then powdered, dried quickly over a water-bath and weighed 150 grains, which proves the fresh, ripe berries to contain just 70 per cent. of moisture.

The amount of ash was ascertained to be 5 per cent. of the dry, powdered berries, 62 per cent. of the ash was soluble in water and contained a considerable amount of potassium.

The berries used in these examinations were collected by the writer in the vicinity of Philadelphia in the last week of September.

THE CONSTITUENTS OF IRIS VERSICOLOR.

The following extracts have been made from a thesis by WM. E. JENKS, Ph.G.:

The recently collected rhizome of blue flag imparts a disagreeable nauseous acrid taste to water by decoction, and more decidedly to alcohol and ether. The acrimony as well as the medicinal virtues gradually diminish by age. The fleshy rhizome transversely sliced and dried in an atmosphere heated to 100°F., then pulverized and placed in darkened well-closed vessels excluded from light and air, will have its therapeutic properties unimpaired for a great length of time.

The *oleoresin* of blue flag is readily obtained by exhausting the rhizome in moderately fine powder with alcohol, sp. gr. ·835, and distilling off the alcohol, the heat being carefully regulated towards the latter part of the operation. It is a dark reddish-brown liquid of a thick viscid consistence, and of a peculiar odor and acrid astringent taste. On treatment with ether and subsequent evaporation, it was comparatively free from astringency, more acrid and lighter in color.

The residue remaining after treatment with ether possessed a somewhat saccharine taste, was readily soluble in water and, with Trommer's test, showed the presence of glucose.

The powder exhausted by alcohol was percolated with water, and yielded a transparent reddish-brown liquid having a very astringent and scarcely acrid taste. Ferric chloride produced a blue black color, and with gelatin solution a gelatinous precipitate was obtained. Alcohol yielded a voluminous precipitate of gum which was readily soluble in water, and in this solution gelatinized with ferric chloride. The presence of albuminous matter and, in the decoction, a starch was likewise proven.

The thesis of D. W. Cressler, Ph.G., treats of the chemical constituents of the rhizome; the following is a synopsis of his results:

After macerating five troyounces of the coarsely powdered blue flag with water and then distilling a minute quantity of volatile matter was obtained as a brownish viscid mass, by agitating the distillate with chloroform and evaporating the latter. The decoction left in the retort was found to contain sugar, gum, tannin and starch.

Sixteen troyounces of the drug were exhausted with 95 per cent. alcohol, the tincture was concentrated by distillation and then treated with water acidulated with acetic acid; the precipitate, after washing

and drying, weighed 1,990 grains, or about 25 per cent. It was freely soluble in ether, chloroform and hot solution of caustic soda, and from the latter reprecipitated by hydrochloric acid.

The acid filtrate, after concentration, gave evidences of the presence of an alkaloid on testing with potassium iodo-hydrargyrate and solution of iodine in potassium iodide. On shaking the acid liquid with ether and evaporating the latter a brown viscous mass remained, which was but slightly soluble in dilute acetic acid, and this solution was not affected by Mayer's test or by iodine. The acid liquid previously treated with ether was rendered alkaline with soda and agitated with amylic alcohol, on the evaporation of which a brownish viscid mass remained, which was almost entirely soluble in dilute acetic acid, the solution yielding precipitates with Mayer's test and with iodine.

For obtaining a larger quantity of the alkaloid 32 troyounces of the drug were digested with water acidulated with hydrochloric acid; the filtered liquid was concentrated, again filtered, the gummy matter removed by alcohol, the decanted liquid distilled, concentrated and rendered alkaline by soda. After agitation with ether, the etherial liquid separated readily on the addition of a few drops of alcohol and on evaporation yielded an amorphous mass, which was soluble in acidulated water, and this solution yielded precipitates with Mayer's test, iodine, tannin and picric acid.

The constituents of the rhizome are a volatile matter, starch, gum, tannin, sugar, an acid resin, fixed oil and very probably an alkaloid.

PRACTICAL NOTES.

By Hans M. Wilder.

Syrups.—When syrups are made they are generally poured into the stock bottles or stone jugs while hot, or at least quite warm; the containers are then stoppered and put aside. Now it often happens with many syrups, particularly when the warm weather sets in, that they sour or ferment. This can in a great measure be prevented by giving the filled syrup bottles, etc., a good shaking up when perfectly cold.

The rationale is: When we pour a hot liquid (or, for the matter of that, a hot solid) into a receptacle and stopper, vapor will arise, collect over the surface of the contents and on cooling be thrown down as water, which floats on top of the dense syrup, mixes by diffusion with some of it, and thus forms a weak saccharine solution, which, as may

be expected, does not keep very long before it spoils, and eventually spoils the remainder.

By observing the precaution of shaking the containers when cold the watery layer will mix with the remainder, and thus form a syrup of normal consistence throughout.

Milk.—Although highly beneficial, not only as an article of daily food, but also, for most invalids, physicians are debarred in many instances from its help through the patients' inability of digesting it. Physicians pay generally too little attention to the temperature of the food which their patients take; if milk be warmed, with constant stirring, to 95 to 100°F., it is surprisingly quickly assimilated.

The writer knows, from his own experience, that one pint of milk, of the ordinary temperature, taken at 9 A.M., completely spoils his appetite for the noonday meal, while, when the milk has been warmed to about the temperature of the blood, he gets hungry enough at 11 A.M.

Quinia.—Amongst all the different vehicles recommended to mask the bitter taste of quinia none is better than our old acquaintance, licorice. Although the usual way is to make a "shake well" mixture with fluid extract of licorice, or an aromatic elixir of the same, it is once in a while prescribed as a powder mixed with powdered extract of licorice. This covers the taste well enough, but the bitterness is still perceptible. I have found that by combining aromatics with it the bitter taste is pleasantly covered.

I have for some time kept ready a Pulvis glycyrrhizæ aromaticus:

Pulv. aromat.,	. . . .	ʒii
" ext. glycyrrhiz.,	. . . .	ʒvi
Ammon. carbon.,	. . . .	gr. xv Mix.

which is mixed with quinia in the proportion of four times its weight (about twice or thrice its bulk). Patients declare themselves very well pleased, and children take it readily. Incidentally I may remark that there is a marked difference in the powdered extract of licorice as found in the market; some produce no more impression on the tongue than a mixture of about equal parts of gum arabic and licorice would do.

Pills of Carbonate of Iron.—Pills made from protosulphate of iron and carbonate of potassium (usually equal parts) are a stumbling-block to not a few pharmacists. By proceeding according to Prof. J. M. Maisch, as follows, all difficulties vanish:

Two drams of each of the above-named salts are rubbed together till the mass not only acquires a brown color, but also forms quite a pasty consistence. Add powdered tragacanth half a drachm, mix well and let stand for 10 to 15 minutes. The mass will now require the addition of but a few drops (5 to 6) of simple syrup to become plastic.

PROCESS FOR RAPIDLY MAKING MERCURIAL OINTMENT.

BY PHIL. HOGLAN.

To the readers of the JOURNAL who manufacture their own mercurial ointment the following plan of readily extinguishing the mercury, and thus quickly producing the ointment, will no doubt be of some benefit.

A few days ago, being desirous of making some of the ointment as rapidly as possible for immediate use, I pursued the following plan:

℞	Old mercurial oint., ...	2 oz.
	Suet, ...	2 oz.
	Mercury, ...	12 oz.

Mix thoroughly the suet with the old mercurial ointment, and to the mixture in a mortar add the mercury in three separate portions, triturating rapidly after each addition till the globules disappear, aiding the extinguishment of the mercury by adding, during each trituration, 15 drops of ether.

By this means I extinguished the mercury in 15 minutes. To this mercurial mixture I now added 4 oz. suet and 6 oz. lard, melted together and strained, and triturated the mixture until cool, thus forming a uniform ointment with little time and labor.

With the hope that this formula may prove useful to some of your readers, I give it to the JOURNAL.

Newcomerstown, Ohio, November 9, 1881.

THE MORPHIA STRENGTH OF TINCTURE OF OPIUM.

BY EDWARD W. SMITH, PH.G.

From an Inaugural Essay.

The samples were examined by the processes of Hager and Staples, and two experiments were made in each case with 50 grams and with one fluidounce of the tincture.

Hager's Process.—50 grams of the tincture were evaporated nearly to dryness on a water-bath; 2 grams of freshly slaked lime were added

with trituration, and afterwards 48 cc. of distilled water. The mixture was heated on a water-bath for one hour, transferred to a wetted filter, the sediment well washed with warm water, and the filtrate evaporated to 50 cc. While still warm, 2 cc. of ether, 6 drops of benzol and 2·2 grams of ammonium chloride were added, and after 24 hours the crystals were transferred to a dried filter, washed with 16 cc. of water, dried at 50°C. and weighed.

Staples' Process.—50 grams of the tincture were evaporated on a water-bath to one-half the bulk, set aside for 24 hours and a viscid sediment separated by decantation and filtration; an equal bulk of alcohol was added and afterwards a mixture of 2·6 cc. water of ammonia, sp. gr. ·960, with 3·4 cc. alcohol. After four days the crystals were collected as before; they were much whiter than those obtained by the first process.

The results were as follows:

		From Fifty Grams.				From One Fluidounce.			
No.	Sp. Gr.	Hager's Process.		Staples' Process.		Hager's Process.		Staples' Process.	
		Grams.	Grains.	Grams.	Grains.	Grams.	Grains.	Grams.	Grains.
1	·954	·53	8·17	·52	8·02	·30	4·60	·29	4.52
2	·962	·38	5·86	·32	4·94	·22	3·33	·18	2·81
3	·954	·42	6·48	·40	6·17	·24	3.65	·23	3·48
4	·967	·36	5·56	·32	4·94	·21	3·17	·19	2·82
5	·956	·25	3·86	·22	3·40	·14	2·18	·12	1·92

The tincture, prepared according to the United States Pharmacopœia, with opium containing 10 per cent. of morphia, contains in each fluidounce 3·75 grains of morphia.

THE ETHERIAL STRENGTH OF SPIRITUS ÆTHERIS NITROSI.

By Henry L. Warne, Ph. G.

From an Inaugural Essay.

The method adopted depends upon the conversion of ethyl nitrite into the corresponding potassium salt and the subsequent oxidation of this compound by a solution of permanganate of potassium of known strength.[1] The latter was made by dissolving three grams of the crystallized salt in one liter of distilled water and standardizing under the usual precautions with a fresh solution of pure iron (pianoforte wire). The mean of two closely agreeing experiments gave 1 cc. of the solution oxidizing ·004861336 gram of iron from the ferrous to the ferric

[1] See "Amer. Jour. Phar." 1880, p. 603.

salt, and therefore containing ·002743182 grams of pure permanganate of potassium.

A weighed quantity of the spirit was placed in a glass-stoppered bottle, 3 or 4 times its volume of a saturated alcoholic solution of potassa was added and the mixture digested on a waterbath until the odor of ethyl nitrite had entirely disappeared. The solution was evaporated nearly to dryness, water was added, the liquid filtered, acidulated with sulphuric acid and titrated with the permanganate solution. Since one molecule of potassium permanganate oxidizes five molecules of potassium nitrite to nitrate and indicates therefore five molecules of ethyl nitrite, 316 (one molecule) potassium permanganate indicate 375 (five molecules) of ethyl nitrite; from these data the etherial strength of the spirit is readily calculated.

The following table shows the result of the examination of ten samples purchased at retail:

NO.	Action of Potass. bicarb.	Action of Potassa Solution in 1½ hour.	in 24 hours.	Ethyl nitrite per cent.
1.	Effervescence,	yellowish tinge,	yellow,	·7680
2.	Effervescence,	light yellow,	brownish-yellow,	·2483
3.	Effervescence,	yellowish tinge,	yellow,	·2223
4.	Effervescence,	light yellow,	brownish.yellow,	·4379
5.	Effervescence,	colorless,	light yellow,	·1415
6.	Effervescence,	light yellow,	brownish-yellow,	·6593
7.	Effervescence,	nearly colorless,	brownish-yellow,	·7792
8.	Effervescence,	light yellow,	brownish-yellow,	1·6049
9.	Effervescence,	light yellow,	brownish-yellow,	·7376
10.	Effervescence,	light yellow,	brownish-yellow,	·3862

CHEMICAL NOTES.

By Prof. Samuel P. Sadtler, Ph.D.

Inorganic Chemistry.—*Examination for Iodine of the Mother-liquors from Salt Brines of West Virginia.*—The remarkable statement having been made that the "bitterns" left from the manufacture of salt by boiling the brines of West Virginia and Eastern Ohio, which have furnished very large quantities of bromine, contain in addition to this element about one-third their weight of iodine, Prof. Mallet, of the University of Virginia, has had the matter investigated in his laboratory by Mr. A. L. Baker.

Four samples of bittern were examined, viz.: No. 1, from Snow Hill furnace, Kanawha co., W. Va.; No. 2, Daniel Boone furnace,

Kanawha co., W. Va.; No. 3, New Castle furnace, Mason co., W. Va., and No. 4, Hartford City furnace, Mason co., W. Va. These bitterns form from 5 to 7 per cent. of the brine as it comes from the wells, and 20 to 30 gallons of bittern will yield 1 lb. of bromine. It was found that part of the iodine—in one specimen all of it—existed in the free state, and could be collected directly by agitation with carbon disulphide, and that potassium nitrite and citric acid answered best for the liberation of the iodine from the iodides present. It was then taken up by carbon disulphide and the amount determined by decoloration with a standard solution of sodium thio-sulphate. No difference in the quantity obtained was produced by the previous addition of arsenious acid; hence, iodates were absent. The results were as follows:

	Free Iodine.		Iodine in Iodides.		Total Iodine	
	M. grms. per liter.	Grs. per gallon.	M. grms. per liter.	Grs. per gallon.	M. grms. per liter.	Grs per gallon.
No. 1. Snow Hill,	59·2	4·14	——	——	59·2	4·14
No. 2. Daniel Boone,	1·8	0·13	38·2	2·67	40·0	2·80
No. 3. New Castle,	12·2	0·85	40·0	2·80	52·2	3·65
No. 4. Hartford City,	12·4	0·87	26·0	1·82	38·4	2 69

Taking the mean of the above results, and calculating on the basis of the returns of West Virginia salt production in 1876 and the statement made above as to the ratio of bittern to salt turned out, it appears that about 5,287 lbs. of iodine go to waste annually in this region, worth at present about $22,000. It seems very doubtful, however, whether the extraction of this from such a mass of bittern can be made profitable. It might be worth while to try Bechi's plan, liberating the iodine by exactly the right amount of nitrous acid or chlorine, and collecting it by filtration through animal charcoal. Judging from experiments on a small scale, the precipitation as cuprous iodide seems to be incomplete. The acid condition of these bitterns suggests the probability of extensive loss of iodine by decomposition of magnesium iodide during the later stages of boiling; and it would be interesting to ascertain what effect upon the amount left in the mother-liquor would be produced by keeping the brine just neutralized with sodium carbonate.—*Chem. News*, Oct. 28, 1881, p. 207.

Strontianite Found in Large Amounts.—Since it has been shown by Professor Scheibler, of Berlin, that strontium is one of the best means of extracting the cane sugar from uncrystallizable mixtures like molasses, owing to its power of combining with 3 parts of saccharose, any information as to its occurrence becomes of interest. Hitherto,

native strontianite—that is 90 to 95 per cent. pure carbonate of strontia—has not been worked systematically in mines; but what used to be brought to the market was an inferior stone collected in various parts of Germany, chiefly in Westphalia, where it is found on the surface of the fields. Stimulated by the demand likely to arise for it in consequence of Dr. Scheibler's discovery, new localities have been opened up and deposits of considerable importance have been found in Westphalia at great depths. A supply of over ten thousand tons per annum seems to be assured, whereas only a short time ago it was not thought possible that more than a few hundred tons could in all be provided.—*Chem. News*, Oct. 21, 1881, p. 205.

On the Composition of Bleaching Powder.—Professor Lunge, of Zurich, jointly with H. Schæffé, has given the question of the exact composition of bleaching powder a thorough study, and reaches the following results:

1. The most probable formula for bleaching-powder is that proposed by Odling, $Ca\begin{cases} Cl \\ OCl \end{cases}$. Bleaching-powder dried over sulphuric acid contains the hydrate, $2CaOCl_2+H_2O$. Any percentage of calcium in bleaching-powder over and above that demanded by this formula is from free calcium hydrate, which being mechanically enclosed by the bleaching-powder already formed is withdrawn from the action of the chlorine, so that, even in experiments on a small scale, instead of the theoretical 47 per cent. (allowing for the 9 to 10 per cent. of hygroscopic moisture found by analysis) only 43·5 per cent. is gotten.

2. The flocculent residue left when bleaching-powder is dissolved in water is for the most part calcium hydrate, but contains a little of a bleaching compound only slowly decomposed by water.

3. Strong mineral acids, if not used in excess, will develop from bleaching-powder solutions only hypochlorous acid; carbonic acid has the same effect.

4. Dry carbonic acid gas, with the aid of gentle heat, will drive almost all the chlorine out of solid bleaching-powder.

5. Moist air and heat will develop oxygen only from bleaching-powder; dry air, however, will liberate chlorine also.

6. The next favorable condition for the formation of a strong bleaching-powder is the presence of 4 per cent. of water over and above that needed for the formation of the calcium hydrate (using dry chlorine) and a temperature of 20° to 60°C. The strongest

bleaching-powder is obtained at from 40° to 45°C.—*Chem. Industrie*, Sept., 1881, p. 296.

ORGANIC CHEMISTRY.—*On a New Synthesis of Urea from Benzene, Ammonia and Air by the Action of Heated Platinum.*—E. F. Herronn, by drawing a current of air through wash-bottles containing ammonia and benzene, and then passing it over a coil of platinum wire heated to bright redness, has succeeded in forming, along with ammonium carbonate, nitrite and nitrate, a crystallized substance easily recognized as urea. Enough was prepared to analyze, and salts were made from it.

Heated spongy platinum and platinized asbestos were tried as substitutes for the platinum wire, but they apparently produced too much oxidation, forming more ammonium carbonate and less urea than in the case of the wire.

Olefiant gas was also employed, but, while large quantities of ammonium carbonate were produced, no urea was formed.

Acetylene, however, was found to be a good substitute for benzene, very considerable amounts of urea being formed in the case of its use. —*Jour. Eng. Chem. Soc.*, Oct., 1881, p. 471.

Reactions of Thymol.—Hammersten and Robbert have studied the reactions of thymol as compared with those of phenol. With ferric chloride thymol gives no reaction; with sodium hypochlorite, on addition of anilin, the same blue coloration ensues as is obtained with phenol; on the contrary, sodium hypochlorite and ammonia yield not a blue color, as with phenol, but a green color, which after some time passes into a bluish-green, and after 4 or 5 days into a red color. This reaction is recognizable even with a dilution of 1 in 3,000. With Millon's reagent a faint reddish-violet color is produced, which disappears on boiling, whereas with phenol the color remains. Bromine water with thymol yields no crystalline precipitate as in the case of phenol, but a milky turbidity only. Ferric chloride and bromine are therefore the reagents best adapted to show the presence of phenol in thymol. The most delicate reaction for thymol is, however, that with glacial acetic acid and concentrated sulphuric acid, which can be recognized with a dilution of 1 in 1,000,000.

For this purpose the solution to be tested is mixed with one-half its volume of glacial acetic acid and at least an equal volume of sulphuric acid, and is then heated, when a beautiful reddish-violet color ensues, which is not destroyed by excess of acid or by boiling. In connection with the separation of thymol from mixtures may be noted

that ether takes up thymol eagerly, even with a dilution of 1 in 100,000, especially on the addition of several drops of hydrochloric acid. —*Chem. Industrie*, Sept., 1881, p. 304.

Atropia and Analogous Alkaloids.—Regnauld and Valmont state the following conclusions as to the composition of atropin:

The atropin of medicine is a mixture, in variable proportions, of two isomeric crystalline alkaloids, possessing the same therapeutic properties. One of these is atropine α (atropine of Ladenburg); the other is atropine β, or preferably atropidine (hyoscyamine of Ladenburg). Atropidine exists in such abundance in belladonna that it forms about two-thirds of the crystalline atropine of the codex. It is the crystalline alkaloid of all the mydriatic Solanaceæ and of Duboisia, and has improperly been named daturine and duboisine.—*Eng. Chem. News*, Oct. 28th, 1881.

THE ALKALOIDS OF NUX VOMICA.

By W. A. Shenstone.

In a paper read before the Pharmaceutical Society ("Pharm. Jour.," December 8th, 1877) I mentioned some substances which apparently had been produced by the action of water containing a very small proportion of acetic acid on brucine heated with it, in the course of attempts to free the brucine from strychnine by crystallizing from hot aqueous solutions containing small quantities of its acetate.

On endeavoring to obtain the same products on a large scale from another specimen of commercial brucine I was only partly successful, and thinking my former results might have been due to some difference in the alkaloid, as for instance the presence of impurities, I decided that it would be well to prepare a specimen of brucine by a process so devised that heating should be avoided as far as possible, and heating with alkalies or acids altogether. It then seemed to me that, as the researches on which our present knowledge of the alkaloids of nux vomica is based were made with material which had been prepared by the old processes, and, as it is quite certain that these alkaloids are much affected by saponifying agents, it would be well to take the opportunity of re-examining at least brucine, which is most readily attacked. I also thought that by making my examination as exhaustive as possible I might hope to do something more towards finally set-

ting at rest the question of the existence of a third alkaloid, *igasurine*, in nux vomica seeds.

With the kind aid of Messrs. Hopkins and Williams, 56 lbs. of the seeds of *Strychnos nux vomica* were powdered, exhausted with alcohol, to which one-sixth part of water had been added, and the bulk of the spirit recovered. The product, in the form of a not very thin extract, was mixed when cold with 4 gallons of water, containing three-tenths per cent. of sulphuric acid, which dissolved the alkaloids, leaving the greater part of other organic substances behind.[1]

The acid solution separated from the undissolved matter was mixed with excess of sodium carbonate, and after a few hours the precipitate was collected. The mother-liquors, which retained a large quantity of alkaloid, were examined fully by a process which will be described later.

The precipitate produced by potassium carbonate was dissolved in chloroform, and the solution extracted by thoroughly washing with water to which sulphuric acid was added gradually during the process, the first washing being withdrawn whilst still alkaline, in order to avoid crystallization, which was apt to occur rather easily with strong and at the same time acid solutions; the subsequent washings were made with excess of acid. The solution of brucine sulphate thus obtained was still far from pure, and when alkalies were added to it in the ordinary way, gave a very unsatisfactory precipitate, but when the solution was placed in a shallow dish with a beaker containing some diluted solution of ammonia in the centre, and the whole was covered up pretty closely, the gradual action of the ammonia caused the alkaloids to separate in crystals, which it was easy to deal with afterwards. The portion of the bases which had been got in the crystalline state in this manner was treated with dilute spirit, to dissolve the brucine, and the solution allowed to evaporate spontaneously. A crystalline mass of brucine then remained, which still contained much strychnia; it was dissolved in dilute sulphuric acid, added in such quantity as to leave a faintly alkaline solution, and precipitated with potassium

[1] This method was adopted after repeated trials on a small scale, which showed that, on account of the large amount of mucilaginous substances in the seeds, a tolerably economical method of extraction without the use of spirit was impossible, and of course the use of alcohol made it necessary to remove it subsequently by heat, as brucine is very freely solube in in that liquid.

iodide, the hydriodide of brucine was recrystallized as often as necessary from alcohol; and finally the alkaloid was regenerated by agitating the solid hydriodide with solution of sodium carbonate, and shaking up with chloroform; finally the chloroform solution was extracted with dilute acid, and the base precipitated with ammonia.

This mode of purification answered admirably. *The brucine obtained did not yield any evidence of the presence of strychnia, when it was treated with diluted nitric acid, and the product examined for that substance,* thus confirming the results previously obtained on distinct lines of experiment, by A. J. Cownley ("Pharm. Jour." [3], vi, 841; "Am. Jour. Phar.," 1876, p. 354) and myself, when we examined the alleged conversion of brucine into strychnine by the action of nitric acid (Sonnenschein, "Pharm. Jour." [3], vi, 201; "Am. Jour. Phar.," 1875, p. 345, etc.), and it easily yielded the acetate in crystals on spontaneous evaporation of a solution of the base in acetic acid. This salt has been previously described as existing only as a gummy residue (probably owing to traces of impurity in the alkaloid from which it was prepared); it is not very stable, quickly showing a slight change of color.

Having now found a means of preparing brucine free from strychnine, and otherwise in a pure state, by a process which seemed to guarantee that the alkaloid had not undergone change during its preparation, I made the following analyses (see table, Nos. I and II).

As the alkaloids which remained in the mother-liquor when the greater portion was in the first instance precipitated by sodium carbonate were considerable in quantity (90 grams), and as they would contain, besides the brucine and strychnine, the third alkaloid, if there be one, I examined the bases from this portion, very carefully, by the following method. The alkaline liquid was washed with chloroform till it was free from bitterness, and no longer gave any precipitate with tannin; the chloroform solution obtained was extracted with acid as before; the acid solution precipitated by exposure to ammoniacal fumes, and the brucine dissolved from the product with dilute spirit. The alcoholic solution yielded the greater part in crystalline form on spontaneous evaporation, but a quantity remained in the aqueous mother-liquor, which could be partly removed by washing with chloroform, and partly not. I will speak of these three fractions separately.

1. The crystalline portion was converted into hydriodide, recrystallized from alcohol, and regenerated as before, but with this difference, that the final precipitation with ammonia of a large part of it was done fractionally, so as to yield the alkaloid in three fractions, A—1, A—2, A—3, a small portion (1·5 per cent.) remaining in solution; this part was only examined qualitatively. It exhibited no point of difference from the rest.

On combustion the three fractions gave results stated under III, IV, V and VI.

2. The portion of the alkaloid extracted by chloroform from the aqueous mother-liquor of the portion which crystallized, after purification by recrystallizing the hydriodide and regenerating in the manner described, was dried at 105° to 107°, and analyzed (No. VII).

The percentages corresponding to these various analyses stand as follows:

	C.	H.	N.	O.
I	69·52	6·62	...	...
II	...	...	7·2	...
III	69·70	6·71	...	...
IV	69·54	6·60	...	...
V	69·89	6·50	...	...
VI	69·49	6·54	...	...
VII	69·95	6·64	...	...
Mean	69·68	6·60	7·2	16·52

The accepted formula for brucine, $C_{23}H_{26}N_2O_4$, requires C 70·0, H 6·64, N 7·1, O 16·26.

Two determinations of platinum in platinum salt gave results corresponding in each case to 16·22 per cent. of Pt. The present formula requires 16·43 per cent. of Pt.

Three determinations of iodine in hydriodide gave respectively 24·47 per cent., 24·25 per cent., 24·33 per cent. Mean, 24·38 per cent. The accepted formula requires 24·34 per cent. of iodine.

The results of these various analyses leave no doubt that the formula $C_{23}H_{26}N_2O_4$, already accepted, is correct, and hence it appears that brucine employed by previous experimenters prepared by the old processes, was not a saponification product of the alkaloid present in the seeds, nor mixed with any such substances, but that the alkaloid in the seeds is identical with that which they obtained. I have found in experiments described further on that brucine is without doubt profoundly affected by heating with acids, alkalies, or even

water, but with one exception the products are amorphous, resin-like bodies, from which unaltered brucine is easily separated in a pure state. I have little doubt, however, that the ordinary processes are very wasteful, from the following facts: From 56 lbs. of nux vomica seeds in the above operations I obtained in all a little more than 20 oz. of mixed crystalline, though not perfectly pure alkaloids, an amount corresponding to above 2¼ per cent. The recorded proportions of brucine and strychnine, taking the improbable event of both being at their maximum, is 1·5 per cent. in all ("Pharmacographia"), so that my yield was certainly some 33 per cent. above that previously recorded, and perhaps exceeded it still more. On the other hand it is questionable whether the troublesome nature of my process would not take from it any advantage it may possess when applied on a large scale.

3. *Igasurine.* — The work detailed in the preceding pages give account of the portion of alkaloid precipitated by alkalies from the original solution in dilute acid, and of those portions of that which remained in the alkaline liquid, which, after separating strychnia, either crystallized on evaporation of the alcoholic solution, or were extracted afterwards from the mother-liquor of the crystallized portions by chloroform. It will be observed, on examining the results of analyses quoted on page 613, that these fail to give any indication of the presence of anything among them having a composition different from that of brucine. There remains, however, for consideration the contents of the mother-liquor, from which everything that chloroform would extract had been removed. This liquid gave on slow evaporation good-sized brown crystals, of a substance which, from its apparently definite character, puzzled me a good deal for a time. It appears to be very similar to a substance which, for the sake of distinction, I called a "new brucine salt," in a slight notice of a very small quantity of it obtained a few years ago ("Pharm. Jour.," Dec., 1877).

It forms in good-sized crystals from impure solutions, but I have failed to get them so large after recrystallizing; as it is freely soluble in warm water and alcohol, and less so in the cold, it can be easily purified by recrystallizing, when it has a pale straw color, which is not removed by further similar treatment; addition of alkalies to the aqueous solution gives a white precipitate; the substance is strongly red-

dened by nitric acid. Analyses gave the following results: C 62·2 to 62·47, H 6·77 to 6·79.

These analyses were made with potassium chromate for absorbing nitrous fumes, as first proposed by Perkin; probably, therefore, they are not quite trustworthy, as I did not find that process work very well, and had some difficulty in effecting complete absorption. I quote them, however, as they agree rather closely with those required for the *g* and *h* igasurines of Schützenberger, coming between the percentages required for the two formulæ.[1] It seems very likely that the various igasurines of this experimenter were bodies like this, which, as I shall presently show, is almost certainly nothing but brucine with some very persistent impurity. When a portion was rendered alkaline and extracted with chloroform, as much as 89·7 per cent. was taken up by the chloroform. In order to examine the base, several grams were dissolved in water, and potassium iodide was added to the solution. A copious precipitate fell, which was purified by recrystallizing from spirit and regenerated; it was then found to contain 70·8 per cent. of C and 6·42 per cent. of H. As it had a slightly brown color the product was again converted into hydriodide, crystallized and the base regenerated and analyzed, giving 70·19 per cent. of C and 6·8 per cent. of H.

These numbers correspond so closely with those required for brucine that there is no doubt as to the nature of the base. I may add that its reactions agree precisely with those of brucine. The proportion of base extracted by chloroform was so high, and the proportion of carbon and hydrogen so much lowered by the small amount of other substances present, that it was hard to imagine this could be a definite compound of brucine with any organic acid; I am more inclined to think that the 89·7 per cent. taken up by chloroform still included some impurity, but I had not material enough to decide the point. Notwithstanding this opinion, I made careful search with the object of detecting any definite acid constituent, by treating with acids and distilling, and by extracting acidified solutions with ether and other solvents; I met with no success, however. I also examined the action of solutions of it on various metallic salts, but although it gave a precipitate with copper salts the amount was too inconsiderable to offer any hope of obtaining any results in that direction. In con-

[1] *g* Igasurine, 62·37 per cent. of C; 6·9 per cent. of H.
h Igasurine, 62·68 per cent. of C; 6·47 per cent. of H.

cluding my remarks on this substance, I may say that it seems to me exceedingly likely that the workers who have supposed nux vomica seeds to contain a third alkaloid have been misled by bodies of analogous nature to this. As regards the work or Schützenberger, I have already written. As regards that of Desnoix, I may add that his methods of purification would cope but very imperfectly with such a substance as this.

It will be perceived that these various results fail to confirm the presence of any third alkaloid. Of course, it may be argued that in the course of purification for analysis I may have overlooked such a body. This could be urged against any process whatever, especially any process that has to deal with a body accompanied by so much foreign matter as brucine and most alkaloids are. On the other hand, I had, by exhausting the mother-liquors, which might be expected to contain igasurin, 90 grams of crude but crystalline alkaloids, dried only by pressing in calico. After working this up, I found that I could account for slightly under 82 grams, showing a loss of 8 grams, against which was a loss in the purification of the last product; and, further, a part of it remained mixed with resinous impurity, from which it could not be separated, certainly weighing several grams in all, though I did not weigh it, owing to an interruption in my work at the time. Had there been anything present of different nature to brucine or strychnine I do not think I could have overlooked it.

The experiments I have been describing were undertaken in consequence of an opportunity presenting itself from the necessity I was under of preparing brucine by a method that should certainly not yield saponification products in its place, or mixed with it, in order to obtain trustworthy results in examining the action of acids or alkalies upon it.

The results I have arrived at have satisfied me that the brucine of commerce, though sometimes not perfectly pure, does for the most part consist of brucine, and I am confirmed in this opinion by the fact that I have since obtained from commercial brucine a product similar to that yielded by my own alkaloid when acted on by alcoholic soda, which reagent only has yielded any results of interest.

It was my intention to have extended my experiments with saponifying agents to strychnia; various obstacles, however, delayed me a good deal, and meanwhile experiments with that substance have been made by Gal and A. Etard ("Bull. Soc. Chim." [2], xxxi, 98), who,

by the action of baryta-water, have obtained, not products such as those obtained by Wright, Ladenburg and others from several alkaloids, but very oxidizable bodies, $C_{21}H_{26}N_2O_4$ and $C_{21}H_{28}N_2O_5$, formed respectively by the assumption of 2 and 3 molecules of water, which differ from strychnia in their color reactions, and whose gold and platinum salts are not stable. As their work does not appear to have extended to brucine, I have been much interested at the result of my previously-projected experiments in this case.

When brucine was heated with water, aqueous potash or dilute sulphuric acid in sealed tubes to various temperatures, and for various times, nothing further was obtained on examining the products than unaltered alkaloids, small quantities of yellow, slightly basic varnishes which did not yield crystalline salts, and mother-liquors, which underwent rapid oxidation on exposure to air. Examination for acids by acidification and distillation, or treatment of the acidified solutions with ether and other such solvents, gave no results. When, however, alcoholic soda was employed, there was obtained a substance rather soluble in water, which, after preliminary trials, was prepared as follows:

About 60 grams of commercial brucine was placed with 600 cc. of 5 per cent. alcoholic soda in a copper bottle securely closed, and was heated in a bath of boiling water for 12 hours. The contents of the bottle were then diluted with spirit and treated with carbon dioxide to remove the alkali, filtered and the filtrate exposed that the spirit might evaporate. There remained a mass of black, varnish-like substance containing numerous minute crystals; this was treated with the smallest possible quantity of water to form a sort of syrup, and filtered, and the residue was washed with as little water as possible. In this way I obtained a little over 7 grams of a grey crystalline powder, considerable loss having occurred in securing it. Various methods of purification involving recrystallization having failed in consequence of the instability of the substance in solution, it was dissolved in a very small quantity of water with dilute hydrochloric acid, filtered quickly, precipitated with ammonia and washed with distilled water. Two such treatments yielded the body not absolutely pure, but very nearly so, and in as pure a state as was practicable, since the solution in acid visibly underwent change if left more than two or three minutes. About $2\frac{1}{2}$ grams were secured in nearly colorless microscopic crystals, which were quite stable in the dry state, with the following distinct charac-

ters: They were not reddened by nitric acid, but dissolved to a pale bright yellow liquid; if strong acid is used, this on dilution gives no further result with stannous chloride than decolorization, but if *boiled* with dilute nitric acid the solution gives a wine-red coloration on addition of stannous chloride, much fainter, however, than that given by brucine when similarly treated. On exposure of an ammoniacal solution to the air for a few hours it acquires a purple color, which becomes green later, but is changed to purple again by dilution; on adding an acid to this a fine deep green is developed. Bromine water added gradually produces a precipitate; if, when excess has been added, heat is applied, the color due to bromine gradually goes till the boiling point is reached, there is then suddenly developed a fine magenta-red, which is destroyed by stannous chloride, but is permanent for several days at least in air. Brucine, similarly treated, gives first a very transient pink, no precipitate, and finally, on boiling well, develops a lighter shade of same red color, the two actions being quite distinguishable.

It contains nitrogen, and gives a gold salt, which undergoes reduction almost at once, and a platinum salt, which, though more stable, is not sufficiently so for analysis. This platinum salt is rather soluble in water, and the mother-liquor deposited handsome red microscopic crystals, which were seen to contain here and there a few small pale yellow crystals. All attempts to obtain crystalline salts of it by solution in acids failed, only yellow varnishes being produced, which quickly underwent oxidation on exposure. I was unable to attempt to prepare any salts by methods of precipitation for want of material.

Portions were dried at 100°C., and analyzed:

		Theory for $C_{23}H_{28}N_2O_5$	Found.		Mean.
C_{23}	276	66·99	66·01	65·95	65·98
H_{28}	28	6·80	7·16	6·91	7·03
N_2	28	6·80	.....	.....	.....
O_5	80	19·41	.....	.....	.....

These numbers and the general character of the body show it to be of similar nature to those produced by the action of baryta-water on strychnine, viz., that it is a hydrobrucine, $C_{23}H_{28}N_2O_5$, formed by addition of 1 molecule of water to each molecule of the alkaloid. This is, to some extent, confirmed by the action of dehydrating agents upon it. When, after dissolving in strong nitric acid and diluting, stannous chloride is added, complete decolorization ensues; but if the alkaloid

is first dissolved in strong sulphuric acid, then nitric acid added to it, and finally stannous chloride after diluting, a faint wine-red color is developed, whilst, if the substance is heated for a few hours with the sulphuric acid, and nitric acid is then added, there is a dark reddish-brown color, reminding one of the brucine reaction, though duller; and then, on adding stannous chloride, a fine wine-red color is produced, like that obtained when brucine is itself dissolved in strong nitric acid and diluted and mixed with stannous chloride. I was not successful in an attempt to reproduce crystalline brucine in this manner, but was only able to attempt it on a very small scale; the experiment yielded a little varnish-like substance with the above reaction. The main part of the substance was differently affected, for on addition of excess of ammonia after the treatment with sulphuric acid, a magnificent deep green coloration was produced, like that developed by exposing alkaline solutions of the original substance. This green substance was obtained as a solid by exposing alkaline mother-liquors from purifying hydrobrucine to the air, and drying *in vacuo*. It is fairly stable when dry, but less so in acid or alkaline solutions. It dyes silk and mordanted calico; the colors seem fairly permanent when dry, but will not bear much heat in presence of water.

I originally commenced these experiments hoping to obtain saponification products, and intending to submit these to limited oxidation; the experiments of Gal and Etard on strychnia and mine on brucine show that these alkaloids are not affected, as many others are, by reagents of this kind. It will therefore be necessary to study the oxidation of these compounds in the unaltered state. This I am immediately proceeding to do, and since this paper was written I have already made satisfactory progress in that direction.—*Jour. Chem. Soc.*, Sept., 1881.

TRANSFORMATION OF MORPHINE INTO CODEINE AND HOMOLOGOUS BASES.

By E. Grimaux.

When 1 mol. morphine is dissolved in alcohol containing 1 mol. sodium hydroxide, 2 mols. methyl iodide added, and the mixture gently heated, an energetic reaction takes place, the main product of which is codeine methiodide, $C_{17}H_{18}NO_2OCH_3MeI$, identical with the compound formed by the direct union of codeine with methyl iodide.

When only half the above quantity of methyl iodide is employed, free codeine is obtained; but the yield is only small, since the greater part of the methyl iodide combines with the morphine, forming morphine methiodide. The codeine thus artificially prepared is identical in chemical properties and crystalline form with the codeine extracted from opium. Its molecular rotatory power for $[\alpha]_D = -130{\cdot}34°$ approximately; that of natural codeine being $-133{\cdot}18°$.

If ethyl iodide is substituted for methyl iodide in the above reaction, a new base, $C_{19}H_{23}NO_3$, homologous with codeine is obtained. It crystallizes with 1 mol. H_2O in hard brilliant plates, which are slightly less soluble in boiling water than codeine, but dissolve readily in alcohol and ether. It melts at 83°, forming a limpid liquid which does not crystallize on cooling; at 100° it becomes brown and is decomposed. The hydrochloride crystallizes in mammillary groups of fine needles. The base is precipitated from solutions of its salts by potassium hydroxide and the alkaline carbonates, but not by ammonia.

Careful study of the properties of morphine leads to the conclusion that it is analogous to phenol. From this point of view, codeine is the methylic ether of morphine, and the new base is the ethylic ether. A whole series of such ethers may exist, and for these the author proposes the generic name of *codeines*. Codeine will then be *codomethylene*, and the new base will be *codethylene*.

Bochefontaine has found that codethylene acts as a poison, producing convulsions.—*Jour. Chem. Soc.*, Sept., 1881, from *Compt. Rend.*

THE PHYSIOLOGICAL ACTION AND CHEMICAL REACTIONS OF CHINOLIN.

By J. Donath.

Some time since, the author called attention to the antipyretic and antiseptic action of chinolin. It was stated among other things that it can lower the temperature of the blood, prevent the putrefaction of easily decomposable substances, such as urine, blood and gelatin, stop the coagulation of blood and greatly retard that of milk.

How energetic a bacteria poison chinolin is has since been proved by some direct experiments with Bucholz's cultivation liquid (containing sugar candy 10 parts, ammonium tartrate 1 part, and potassium phosphate 0·5 part, in 100 parts of water, and with an alkaline reaction).

Two beakers, each containing 100 grams of this liquid, and one of them in addition 0·20 gram of chinolin were exposed without a cover. The addition of a putrescent liquid is not necessary for the development of bacteria, as these result after about eight days through the deposit of germs from the atmosphere. After twelve days the control liquid was turbid; grey-brown flakes of fungus, as big as a hazelnut floated on the surface, and in the liquid and at the bottom were pellets of whitish transparent fungus. Forty-six days after the commencement of the experiment the control liquid was brownish-yellow, covered partly with brownish skin, partly with swollen balls of greenish fungus, showing under the microscope a dense tangle of thread-like forms and yellowish granular pieces, and smelling like yeast. The liquid containing chinolin, on the contrary, remained quite clear and had not lost the smell of chinolin. It may also be mentioned that in a well-corked bottle, half full of unboiled Bucholz liquid, there was no development of bacteria at the end of four months. The prevention of fresh access of air was therefore sufficient to check the development of bacteria.

In the communication referred to the antifermentative property of chinolin was also mentioned. It was shown that even a 0·2 per cent. solution checked the lactic fermentation. But this antizymotic action does not extend to the alcoholic fermentation; on the contrary, chinolin proves to be remarkably inactive towards yeast cells. This would appear to show that there is a remarkable difference between the action of chinolin and that of quinia, since Liebig says, ("Ann. Chem. Pharm." cliii, 152), "My experiments as to the action of quinia upon fermentation confirm the results already obtained by Kerner and others; fermentation is retarded by a small quantity of quinia, and entirely suppressed by a larger quantity. A fermentable mixture, containing 5·0 parts of sugar, 5·0 parts of beer yeast, and 95 parts of water, to which 0·2 parts of quinia sulphate were added, still contained after forty-eight hours 4·75 parts of sugar. In a control mixture, on the other hand, the 5·0 parts of sugar were entirely broken up." The following experiments show, however, that also in the behavior towards alcoholic fermentation there is no essential difference.

Experiment 1.—Three beakers were prepared, each with 2·5 grams of grape sugar, 2·5 grams of pressed yeast and 100 cc. of water; to one was added, besides, 1·0 gram of chinolin hydrochlorate and to a

second 0·2 gram of quinia hydrochlorate. All these mixtures passed into vigorous fermentation, and after five days there was found, by means of Fehling's solution, in the chinolin mixture, 0·30 gram of grape sugar; in the quinia mixture, 0·25 gram; and in the control mixture, 0·07 gram.

Experiment 2.—Three beakers were prepared, each with 5 grams of grape sugar, 5·0 grams of pressed yeast, and 100 cc. of water. To one was added 5 grams of chinolin hydrochlorate, and to a second 2·0 grams of quinia hydrochlorate (or ten times the quantity used by Liebig). In this case also all three passed the next day into brisk fermentation, the chinolin mixture being indeed the most vigorous and the quinia the weakest. After three days the fermentation had nearly ended, and the chinolin mixture contained 0·26 gram of grape sugar, the quinia mixture 0·71 gram, and the control mixture 0·50 gram.

Chinolin, therefore, even in 5 per cent. solution, does not in the least stop the alcoholic fermentation; quinia, also, even in 2 per cent. solution, does not prevent it.

The antipyretic and antiseptic properties of chinolin have already brought it into medicinal use, and therefore the following information as to some easily carried-out reactions for testing the purity of the preparation or detecting it in excrement, etc., may find a place.

Chinolin salt in aqueous solution is precipitated milky white by potash ley. The precipitate dissolves with difficulty in excess of the precipitate, easily in ether, benzin and strong alcohol, and somewhat less rapidly in carbon bisulphide, chloroform and amylic alcohol.

Sodium carbonate also precipitates chinolin white, with evolution of carbonic anhydrid; the precipitate is insoluble in excess.

Ammonia produces a white precipitate, but this is tolerably easily soluble in excess. Ammonium carbonate behaves similarly.

Solution of iodine in iodide of potassium (potassium iodide 7 parts, iodine 5 parts, water 100 parts) produces a red-brown precipitate insoluble in hydrochloric acid. Limit of the reaction: 1 in 25,000.

Phosphomolybdic acid (10 parts of sodium phosphomolybdate in 100 parts of water and nitric acid added up to a strongly acid reaction) gives with solution of chinolin salt to which nitric or hydrochloric acid has been added a yellowish-white precipitate, which readily dissolves colorless in ammonia. Limit of the reaction: 1 in 25,000.

Picric acid (1 part in 100 parts water) gives a yellow amorphous precipitate, soluble in alcohol, more difficultly in hydrochloric acid, and easily with a reddish-yellow color in solution of caustic potash. Limit of reaction: 1 in 17,000.

Mercuric chloride (5 parts in 100 parts water) gives a white flocculent precipitate that rapidly settles, easily soluble in hydrochloric acid, more difficultly in acetic acid. From dilute solutions small crystalline needles are formed. Limit of reaction: 1 in 5,000.

Iodide of potassium and mercury (5 parts of potassium iodide and ¼ part of mercuric chloride in 100 parts of water) gives a yellowish-white amorphous precipitate, which upon the addition of hydrochloric acid is converted into delicate amber-yellow crystalline needles (characteristic reaction). Limit of the reaction: 1 in 3,500.

Concerning the definition of the limits of the last five reactions, the most delicate for chinolin, it should be remarked generally, that not only the quantity of the body upon which it is to react, but also that of the reagent, should be known. In every case 5 cc. of the particular reagent was added to 45 cc. of water and the dilute solution of chinolin salt, containing a known quantity, allowed to run in drop by drop; with the exception of phosphomolybdic acid, where 5 cc. each of phosphomolybdic and pure concentrated nitric acid were added to 40 cc. of water.

The important influence the proportion of the liquid to be tested to the reagent has upon the limit of the reaction is shown by the following example: In a mixture of 60 cc. of water and 15 cc. of 1 per cent. picric acid, 1 milligram of chinolin hydrochlorate produces a permanent precipitate, which would give the limit of the reaction as 1 in 75,000; whilst in a mixture of 70 cc. of water and 5 cc. of the same picric acid,—consequently in the same quantity of liquid,—a distinct precipitate first results with 7 milligrams of chinolin hydrochlorate, which would give the limit at about 1 in 11,000.

Potassium ferrocyanide colors solution of a chinolin salt reddish. Upon the addition of a mineral acid, but not acetic acid, a reddish-yellow amorphous precipitate is thrown down, which afterwards becomes crystalline. Limit of the reaction about 1 in 1,000.

Solution of potassium ferrocyanide in hydrochloric acid produces in concentrated solution of chinolin beautiful small crystals.

Potassium bichromate, carefully added, forms delicate dendritic crystals, soluble in excess of the reagent.

Chinolin is not precipitated by tannic acid or ferric chloride. No color reaction is produced with dry salt of the alkaloid, either with concentratrd nitric or sulphuric acid (the latter alone or together with oxidizing materials).

Numerous experiments upon healthy as well as sick persons have shown that chinolin in large doses (1 to 2 grams daily) can be taken without injury. This gives the conditions for the internal administration of an antsseptic—namely, the possibility of giving it in gram doses without injury to the nervous system or to the mucous membrane with which it comes into contact—which conditions are also for the most part fulfilled by quinia and salicylic acid.

On the other hand, it is upon just the same ground that carbolic acid is excluded from internal use, because—in consequence of its property of precipitating albumen—it strongly corrodes the mucous membrane, and experience has shown that it strongly affects the nervous system. Albumen is not precipitated even by a concentrated solution of chinolin; only a slight opalescence is produced. That albumen is not coagulated by chinolin follows from the previous statement that chinolin prevents the coagulation of blood and of milk.

Chinolin is not found in the urine after administration, and the author thinks that before it arrives there it is prôbably oxidized to a pyridine carbonate. Chinolin is readily oxidized by treatment with potassium permanganate to pyridine dicarbonate; it is possible that a similar change takes place in the body, and this would be more probable at a fever temperature than in a healthy body.—*Phar. Jour. and Trans.*, Oct. 15, 1881, from *Beriehte*, xiv, 1769.

Chelidonium majus, Lin.—

Prof. J. M. Maisch, Dear Professor: I wish to call your attention to the local but very great importance given to Celandine in our locality. The flower consists of four yellow petals and the plant answers the description in the National Dispensatory. The value attached to it here is as a supposed cure for threatened phthisis (the people do not put it so vaguely, however, they claim it *cures*). A gentleman, whose mother and brothers all died of pulmonary consumption, was taken as they were at first; but, by the use of the Celandine, his cough ceased and all other symptoms indicating phthisis also. This was ten years ago. Whenever threatened with a cough

now we take the Celandine. A Mr. M., of Lexington, Ky., two years ago was "given up" by the physicians as a victim to consumption. He heard of the former case, sent for the Celandine, used it and is now apparently as hearty a man as you would desire to see. His age is about 65 years. There are so many instances of the very good effects of Celandine, so well authenticated, that I have at last come to the conclusion that there is certainly more real merit in the herb than the books indicate. The manner of using it here is as follows: Two or three ounces of the fresh root is put in one pint of whisky, let macerate one week; then take one teaspoonful at a dose when required, which is about three times daily.

I give you this information thinking, perhaps, if in your mature judgment it is worth the while, you might give the public or profession the benefit of its worth. In case it is desirable, I can give you verbatim statements from at least a score of persons within very convenient reach, who will vouch for its efficiency.

CHAS. O. THIEBAUD, Ph.G.

Vevay, Ind.

COMPOUND SYRUP OF SARSAPARILLA MADE WITHOUT THE USE OF ALCOHOL.

(INTERMITTENT DISPLACEMENT EMPLOYED.)

BY ROBERT F. FAIRTHORNE, PH.G.

A question that has often presented itself to my mind is whether there is any necessity for the use of alcohol in making the compound syrup of sarsaparilla of the U. S. Pharmacopœia, and, after reflection and experiment, I have found that there is none. This conclusion has been arrived at from the following reasons:

1. That in the officinal syrup there is little or no alcohol; 2. That by the process now used only such principles as are soluble in water are retained, the remainder being separated by filtration previous to the addition of the sugar; 3. That by intermittent displacement with cold water as much of the medicinal virtues of sarsaparilla can be obtained and retained in solution as when diluted alcohol is employed in the quantity ordered by the Pharmacopœia, with subsequent evaporation.

The directions given are to macerate 24 troyounces of sarsa-

parilla in moderately fine powder and other ingredients in 3 pints of diluted alcohol for 4 days, and to gradually displace with diluted alcohol until 6 pints of tincture have passed. This liquid is then evaporated to 3 pints, when one pint of water is added and the sugar necessary to make the officinal syrup.

When the tincture is reduced to 3 pints there will be left in solution such substances only as are soluble in water, with a trace of such as dissolve in extremely dilute mixtures of alcohol with water, on account of the very small amount of spirit retained after evaporation. When, therefore, another pint of water is added we may reasonably suppose that even the small amount which might possibly be retained in the liquid will be almost entirely precipitated, so that practically it would contain no substances that are not soluble in water alone after filtration.

Now, by the method adopted by the Pharmacopœia the tincture is deprived of its alcohol by the heat of a water bath, which requires an exposure of several hours' duration, during which time it is not only possible, but very probable, that a part of the sarsaparillin, and certainly of the essential oil, is volatilized. This being the case, I believe that if cold water only is employed for the extraction of the medicinal virtues of the root that a syrup can be made by means of it that will be equal in every respect to that as now made with diluted alcohol. What, therefore, is the advantage of its employment? Some druggists may, perhaps, be inclined to think that the use of spirit ensures greater permanence to the finished preparation, on account of some of the inert constituents of sarsaparilla being insoluble in alcohol but dissolving in water, such as albumen, pectin and gum; although these substances are not soluble in strong spirit, yet they will dissolve to a certain extent in equal parts of water and alcohol, and will therefore be present in the tincture which is used in preparing the officinal syrup. This being the case, I do not see what advantage there is in using diluted alcohol. In order, therefore, to test this practically I have prepared the syrup in the following manner:

Having taken 24 troyounces of sarsaparilla in moderately fine powder and the other solid ingredients called for in the Pharmacopœia, with the exception of sugar, for making about a gallon of syrup, I put them loosely into a percolator which had previously been closed by means of a cork. Cold water was then poured on and sufficient was added to saturate the ingredients. After standing 24 hours in a cool place the cork was removed, the articles firmly pressed and packed

in the displacer, and enough water allowed to pass through so as to produce a pint of liquid. After an interval of a day another pint of fluid was produced in the same way. Then, after setting aside for 24 hours, more water was passed through so as to obtain another pint. These 3 pints were mixed together and kept in a cool place. Percolation was then continued until half a gallon of liquid was obtained, which was evaporated to a pint by means of a water bath. When this is accomplished, the liquid is mixed with the reserved 3 pints, and, the sugar having been added, it is dissolved by the aid of heat, which should reach 162°F., so as to coagulate any albumen present, strained and the essential oils are added.

The syrup thus made will be found equally strong in taste as that prepared by the process generally employed, and by dispensing with the use of alcohol great saving in expense will be effected. In appearance it is, if anything, superior, being clearer and quite as dark in color.

By intermittent displacement is meant the treatment of materials as described in the process just mentioned, namely, by alternately displacing a portion of the fluid (after maceration) and allowing an interval of time to supervene before continuing to do so. By this means, in ordinary practice, a thorough exhaustion of the active or medicinal ingredients of the plants can be effected even when the drug is not quite as finely powdered as would be necessary when continued percolation is used. It combines the advantages of both maceration and displacement, and I can confidently recommend its utility.

Strychnia Sulphate.—Commercial strychnia sulphate, $C_{21}H_{22}N_2O_2,H_2SO_4+2H_2O$, crystallizes in needles. The water is expelled at 150°C. To prepare the neutral sulphate, $(C_{21}H_{22}N_2O_2)_2H_2SO_4$, a solution of the acid sulphate is divided into two equal portions, one-half is precipitated by ammonia, and the precipitate is added to the other part of the solution, and the mixture boiled. On cooling the liquid deposits the neutral salt in transparent prisms, containing 5 molecules H_2O. The crystals are anhydrous at 200°. By the spontaneous evaporation of an aqueous solution of this salt transparent pyramids belonging to the quadratic system are obtained. These crystals contain 6 molecules H_2O.—C. Rammelsberg, in *Berichte*, 1881, p. 1231; *Jour. Chem. Soc.*

VARIETIES.

HYGIENE OF THE TEETH.—A hard crust is the best possible dentifrice. I never could get myself to believe in the natural necessity of a tooth-brush. The African nations, the Hindoos, the natives of Southern Europe, the South Sea Islanders, the Arabs, the South American vegetarians, in short, three-fourths of our fellow-men, besides our next relatives, the frugiverous animals, have splendid teeth without sozodont. I really believe that ours decay from sheer disuse; the boarding-house *homo* lives chiefly on pap—wants all his meats soft-boiled, and growls at cold biscuit or an underdone potato; in other words, he delegates to the cook the proper functions of his teeth. We hear occasionally of old men getting a second, or rather third, set of teeth. I met one of them in northern Guatemala, and ascertained that he had become toothless during a twelve years' sojourn in a seaport town, and that he got his new set upon his return to his native village, where circumstances obliged him to resume the hard corn-cake diet of his boyhood years. His teeth had reappeared as soon as their services were called for, and would probably never have absented themselves if a pap-diet had not made them superfluous. An artificial dentifrice will certainly keep the teeth white, but that does not prevent their premature decay; disuse gradually softens their substance, till one fine day the hash-eater snaps his best incisor upon an unexpected piece of bone. Every old dentist knows hundreds of city customers whom the daily use of a tooth-brush did not save from the necessity of applying, before the end of the fortieth year, for a complete "celluloid set." I do not say that a soft tooth-brush and such dentifrices as oatmeal or burned arrow-root can do any harm, but for sanitary purposes such precautions must be supplemented by *dental exercise*. Let a child invigorate its teeth by chewing a hard crust, or, better yet, a handful of "St. John's bread," or carob-beans, the edible pod of the Mimosa siliqua. Children and whole tribes of the northern races seem to feel an instinctive desire to exercise their teeth upon some solid substance, as pet squirrels will gnaw the furniture if you give them nut-kernels instead of nuts. Thus Kohl tells us that the natives of southern Russia are addicted to the practice of chewing a vegetable product which he at first supposed to be pumpkin or melon seeds, but found to be the much harder seed of the Turkish sunflower (Helianthus perennis). Their national diet consists of milk *kukuruz* (hominy, with butter, etc.), and boiled mutton, and they seem to feel that their Turkoman jaws need something more substantial. The schoolboy habit of gnawing penholders, finger-nails, etc., may have a similar significance. The Mimosa siliqua would yield abundantly in our Southern States, and its sweet pods would make an excellent substitute for chewing gum. Our practice of sipping ice-cold and steaming-hot drinks, turn about, has also a very injurious effect upon the brittle substance that forms the enamel of our teeth; no porcelain glaze would stand such abuse for any length of time, and experience has taught hunters and dog-fanciers that it destroys even the bone-crushing fangs of the animal from which our canine teeth derive their name.—DR. FELIX L. OSWALD, *in Popular Science Monthly for November.*

EMULSIONS OF COD LIVER OIL, COMPOUND AND SIMPLE.—Mr. C. L. Diehl, pharmacist, has kindly furnished the following formula to the Louisville "Medical News":

Cod liver oil,	℥iv
Water,	℥iii
Gum arabic,	℥ii

(All by weight).

Triturate the oil and gum together, then add the water and form an emulsion. Add to this:

Ess. peppermint,	♏xl
Oil of bitter almonds,	gtt. ii
Comp. tinct. cardamom,	f ℥i
Syrup of orange,	f ℥iii

if the "compound" emulsion is desired; or,

Oil of wintergreen,	gtt. xvi
Simple syrup,	f ℥i
Water,	f ℥iii

if the "simple" emulsion is desired.

PYROGALLIC ACID IN CHANCROIDS.—In the New York "Medical Journal," August, 1881, we find a synopsis of a paper on this subject, contributed by Lermoyez and Hitier to the "Bulletin Generale de Therapeutique," May 15, 1881. The pyrogallic acid was employed in the form of a vaselin ointment, of the strength of 1·5. Starch is added to the mixture to stiffen it, and prevent its liquefying after it is applied to the body. The formula is as follows: ℞ Starch, 40 parts; vaselin, 120 parts; pyrogallic acid, 40 parts. Care should be taken to have the ointment fresh. On exposure to the air it soon became brown and lost its strength. It was found equally applicable to all forms of chancroid, and in all situations. It was only slightly painful, though it had a mild caustic effect when first applied. This caustic action soon disappeared. The pain produced, it is claimed, was not greater than would be caused by the contact of any indifferent body with so sensitive a sore. Under its influence the chancres, even when phagedenic, healed with surprising rapidity.—*Virg. Med. Monthly*, Sept., p. 477.

VIBURNUM OPULUS.—This remedy is one of our very best when the following symptoms are present: Hysterical condition from uterine irritation, cramps in the extremities during pregnancy, dysmenorrhea of a spasmodic character, and painful, scanty menses.—*Med. Times*, from *South. Med. Record*, p. 276.

THE SUSTENTATIVE PROPERTIES OF COCA.—Dr. Unanue, an earnest partisan of the celestial plant, mentions the case of a courier, on service between Chiquisata and Paz (about 100 miles), who carried for this long journey only coca and two pounds of burnt maize, or potatoes frozen and dried; and further relates that towards the termination of the siege of La Paz by the insurgents, in 1871, the inhabitants, after a blockade of several months during a rigorous winter, in want of provisions were yet obliged to

war simultaneously against the elements, the exigencies of nature and the attacks of the enemy. A few had laid in a stock of coca, and this resource, apparently so scanty, turned out the most powerful allies, since it permitted them to support fatigue, suppress sleep, endure hunger without suffering, and to brave the rigors of the cold.

During the same war a body of patriotic infantry, obliged to traverse, during a rigorous season, one of the coldest plateaus of Bolivia, found itself deprived of provisions while advancing in forced marches to rejoin the divisions encamped in Janin; on arrival, hunger and fatigue had decimated it, and but a few were in a state to combat, but these privileged ones were nearly all young mountaineers, habituated from childhood to carry with them always a stock of coca. From time to time they swallowed tiny balls, prepared in advance with the leaves of coca, from which they had removed the nerves, and which they chewed until they contained no more juice. This precaution conserved their strength.—*Virginia Medical Monthly*, Aug., 1881, from *Cinc. Lancet and Clinic.*

Ergotin in Prolapsus Ani.—A boy five years of age was suffering from prolapsus ani of two years standing. The gut came out in the extent of two and a half inches after each passage. The treatment at first was of the routine kind—cold affusions, cauterization with nitrate of silver, tincture of iron, etc. The bowel persisted in coming down at every passage. As a last resort, a suppository composed of ergotin gr. ii and cacao butter q. s. was tried. The effect of the remedy has been magical, as after the use of a few of the suppositories there has been no return of the condition, and the case is cured.—*Country Practitioner.*

Oil of Ergot in Skin Diseases.—Dr. Shoemaker has obtained excellent results from the use of the oil of ergot in the treatment of the acute variety of eczema. He finds that it is particularly valuable in that form in which the part is hot, tumefied and covered with small vesicles, some of which have burst, and the fluid coming in contact with the surrounding parts has caused considerable irritation. It is also a most useful application in eczema of the lips, in which the surface is tumified and fissured, bleeding readily upon the slightest movement of the parts. It is efficacious in cracked nipples and in herpes of the genitals, as well as in checking the formation of scales in seborrhea of the scalp and other hairy parts of the body. As a local application in erysipelas, oil of ergot is also of great service. In rosacea, after making punctures over the patches with a needle-knife, and allowing the surface to bleed freely, the application of oil of ergot will soothe the part, constrict the blood vessels, and thus greatly modify the diseased action. The remedy is equally serviceable in diseases of the mucous membranes, and has been found of use in catarrh of the nasal passages, in ulceration of the cervix uteri and in gleet. The oil of ergot may be prepared by the addition of benzin to ergot, and afterwards allowing the benzin to evaporate. The substance thus obtained is a moderately thick, reddish-brown fixed oil, with a slight odor of herring pickle and an acrid taste; it is soluble both in alcoholic and alkaline solutions.—*Trans. of the Pennsylvania Med. Society; London Practitioner.*

GLYCERIN IN PHTHISIS.—Prof. Jaccoud, of the Paris Faculty, has strongly recommended ("La Thérapeutique Contemporaire") the use of glycerin as an excitant and agent d'epargne, during the non-febrile period of common phthisis, when codliver oil is no longer tolerated. He recommends the following mixture, which should be taken in the course of the day, either with or between meals:

℞ Rum or cognac, ... 10 grams
Ol. menth. pip., ... ♏ i
Glycerin, ... 40 grams. M.

This mixture is agreeable to the taste and well tolerated by the stomach; even after several months it induces neither satiety nor disgust. The quantity is sufficient for one day, but in cases which present no sign of abnormal excitability of the nervous system or heart the dose of glycerin may be gradually raised to 50 or 60 grams per diem.—*Med. and Surg. Rep.*, Aug. 27, 1881.

A PLAUSIBLE OPERATOR has been traveling through Iowa and the neighboring States, professing to have a specific remedy for acute and chronic rheumatism, the receipt for which he sells to a physician for fifty dollars, agreeing not to dispose of it to any other in the county—a promise which, of course, he makes no effort to keep. This wonderful specific consists of an internal and external remedy. We impart them to the public, as supplied us by one of his victims, adding that it does not strike us as the proper thing for a physician to obtain information in this way, or under any such conditions of secresy, and, therefore, we have little sympathy for those this smooth-tongued speculator has victimized.

Internal Remedy.

Raw linseed oil, ...	ʒiii
Oil of hemlock (pure), ...	ʒii
Oil of sassafrass, ...	ʒii
Oil of peppermint, ...	ʒii
Oil of wintergreen, ...	ʒii
Oil of lemon, ...	ʒi

Put into eight-ounce bottle and fill up with head-light oil, 175 test. Shake well before using. Dose, from five to twenty drops, from three to five times a day, until, in acute cases, there is a change of urine, when give only once a day, at bedtime, until cured.

For chronic cases give from ten to forty drops, four times a day, after meals and bedtime for one month, and then night and morning until cured.

For a bad case of *sciatica*, or *neuralgia*, give from *one to five drops of the liniment mixed with internal remedy*, twice a day, until pain ceases, and then continue with internal medicine only.

Liniment for Swellings, Aches and Pains.

Raw linseed oil, ...	ʒii
Oil of hemlock, ...	ʒii
Oil of horse-radish, ...	ʒii
Oil of celery, ...	ʒii

Put into eight-ounce bottle and fill up with head-light oil, 175 test. Shake well and keep in glass-stoppered bottle. Apply to affected parts with camel's hair brush. For a bad case of sciatica use, hypodermically, three to seven drops over seat of pain. Use freely for lame back and lumbago.—*Med. and Surg. Rep.*, Sept. 17, 1881.

BULLFROG OINTMENT.—The Pacific *Medical and Surgical Journal*, August, 1881, tells of a practitioner in Almeda county, California, who found his patient using bullfrog ointment made by boiling a pint of milk, then boiling a living bullfrog to paste therein, and throwing out the bones. The "ointment" thus prepared is, on the aforesaid patient's authority, the best application for sore breasts. This seems to be a return to the materia medica of the twelfth century; the "science" of one age surviving as a superstition of another. The "Journal's" zoological nomenclature seems to be as much awry as the therapeutics of the patient alluded to, for it calls the bullfrog Bufo, the generic title applied by all other zoologists to the toad.—*Chic. Med. Review*, Sept. 5.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, November 15, 1881.

In absence of the President Mr. Robert England was called to the chair. The minutes of the last meeting were read and approved.

Mr. Sayre was requested to communicate any information relative to *pepsin* testing, but, as the experiments commenced were not completed, he could not report anything very satisfactory.

Mr. Wallace Procter stated, in this connection, that he had recently examined some saccharated pepsin that was prepared in 1877, and that it was quite as active as that made within a few days. This is owing, in Mr. Sayre's opinion, to the dry condition in which saccharated pepsin can be preserved unaltered, while a concentrated pepsin will absorb moisture and become altered.

Prof. Maisch presented a specimen of the bark called *Cinchona cuprea*, from Mr. R. V. Mattison, with a note stating that the specimen yielded 3 per cent. of quinia sulphate, and that the bark had the peculiarity of containing no cinchonidia and rarely cinchonia.

Prof. Remington laid before the meeting a *prescription* which had been handed him by Prof. Maisch, to whom it was sent by one of our graduates, stating the difficulty that he experienced in compounding it. It is as follows:

℞	Strychniæ sulph. (crys.),	gr. i
	Quiniæ sulph.,	gr. xl
	Ferri pyrophosphatis,	ʒi
	Acid. phosphorici dil.,	ʒii
	Syrup. simplicis,	ʒvi

Sig. A teaspoonful four times a day.

The difficulty is that the pyrophosphate of iron gelatinizes or precipitates when in solution with the phosphoric acid. This can be remedied either by the addition of a few drops of ammonia, or, better, by the citrate of sodium or ammonium. The alkaloids are dissolved separately and added afterwards. In this manner the difficulty is overcome without changing the character of the prescription.

Prof. Remington exhibited a trifling device which obviates the soreness produced in the palm of the hand by the frequent triturations required in use of the pestle. The device consists of a revolving metal button screwed to the top of the *pestle handle* so as to permit the motion of the pestle without any friction against the hand.

A *guard for poison bottles* at the dispensing counter was exhibited by Prof. Remington; it consists of a metal cap just large enough to fit over the lip of the bottle. On opposite sides of the lip are grooves, cut with a file, and two pins are soldered into the sides of the cap, at such distance from the edge of the cap that they will fit under the lip of the vial after they have passed the grooves. By a partial rotation of the cap they fasten the stopper effectually in its place till the cap is removed. The simplicity and efficiency elicited general approval. The arrangement was made by T. S. Wiegand.

Mr. Boring exhibited a *wire instrument* made in the shape of a ladle, by the use of which he was able to make two gallons of an *emulsion* of cod liver oil in about fifteen minutes.

Mr. Wallace Procter alluded to the facility with which emulsions containing extract of cannabis, chloroform, etc., might be prepared by the process recommended for turpentine by Mr. Forbes, of California (see this Journal, 1872, p. 61).

Professor Remington exhibited a *section cutter* of comparatively inexpensive construction, which he had found very satisfactory for many purposes in microscopy; the arrangement is that of a plate of brass perforated with holes of different sizes, through which the substance of which the section is desired is forced, and with a very sharp knife or razor, ground flat on one side and concave on the other, the sections are removed as desired.

Prof. Remington also described a method of *preventing the rays of light* from interfering with the use of the monocular microscope. It consists of a card perforated so as to slide tightly on the body of the microscope just below the eye-piece.

Mr. A. P. Brown mentioned that a microscope of very good quality for student's purposes was made by Messrs. Sidle & Co., of Lancaster, Pa., and thought it desirable to have the attention of students called to the same.

A specimen of *castor oil* imported from Italy was exhibited by Mr. Sayre. The appearance of the oil is very fine, it being destitute of color and possesses very little odor. It is put up in white glass vials containing 55 grams, almost two ounces.

The meeting then adjourned.

T. S. WIEGAND.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

ALUMNI ASSOCIATION, PHILADELPHIA COLLEGE OF PHARMACY.—The first social meeting was held October 11th. Dr. A. W. Miller alluded to the symbols which were formerly used to a considerable extent in pharmacy, and corrected an erroneous statement made in the report of his remarks on this subject a year ago. He then proceeded with an explanation of the theory of evolution, tracing the formation of cells, tissues and different organs, with their gradual modifications in the higher types of animals.

The second social meeting was held November 8th, when the subject of *excipients for pill masses* was discussed; the usefulness of glucose and glycerin for this purpose, and of a mixture of the two substances was favorably commented upon; glucose, however, has a reducing effect upon some salts.

Mr. Sayre uses two mixtures of powdered tragacanth and glycerin, one containing five scruples and the other three drachms of the former to one fluidounce of the latter.

Dr. Miller alluded to the presence in *commercial glucose* of a considerable amount of dextrin, and stated that it was used as an excipient by some of the large pill manufacturers; also in the preparation of malt liquors, from 25 to 28 lbs. of it being used as an equivalent for a bushel of malt, one-fourth of the ordinary quantity of which can be replaced by grape sugar; the latter is also used for making the foam of beer more tenacious, and is largely used in the manufacture of cheap candy. Recently glucose manufacturers have succeeded in granulating glucose, and in this state it is employed for *adulterating granulated cane sugar* to the extent of 10 and 20 per cent. The adulteration may be detected by a pocket lens under which grape sugar will appear milk-white, while cane sugar is transparent and crystalline. On throwing some of the mixture into a tumbler filled with water, cane sugar dissolves readily while slowly passing through the water, but grape sugar dissolves quite slowly and will gradually settle.

Mr. E. C. Jones and Dr. A. W. Miller gave an account of their trips from Kansas City to New Mexico and Colorado. Dr. Miller read some extracts from and commented upon a book on the blue and red light as relating to the theory of evolution. After some further discussion, the meeting adjourned.

MISSOURI STATE PHARMACEUTICAL ASSOCIATION.—The third annual meeting was held at Knights of Pythias' hall, Kansas City, at 2.30 P.M., October 25th. Dr. R. T. Miller, president, in the chair. After the usual routine business, the president delivered his annual address, in which he suggested amendments to the present pharmacy law and proper pharmaceutical training by attendance at schools of pharmacy.

Twenty-six new members joined the Association, and the following officers were elected for the ensuing year: A. R. Edmunds, of Miama, President; J. F. Hurt, of Columbia, W. Q. Purcell, of Malta Bend and J. M. Good, of St. Louis, Vice Presidents; W. T. Ford, of Kansas City, Sec-

retary; P. R. Franklin, of Marshall, Treasurer, and J. F. Llewellyn, of Mexico, Local Secretary. The usual committees were appointed, a report from the Board of Pharmacy was received, and a recommendation was adopted favoring the establishment of a department of pharmacy in the State University.

A paper on syrups made by cold percolation was read by J. J. Slack, of Sedalia; and, after tendering a vote of thanks to the exhibitors, the Association adjourned to meet in Mexico on Tuesday, October 24, 1882.

THE WESTERN WHOLESALE DRUG ASSOCIATION held its seventh annual meeting at the Grand Hotel, Cincinnati, November 9th and 10th; the president, T. H. Hinchman, of Detroit, in the chair. A. B. Meriam, of Cincinnati, acted as secretary. Reports were read from the treasurer—showing an increased balance—and from the committees on drug market, on insurance, on legislation, on commercial travelers and on proprietary goods. The report on legislation states that "the New York statute against the adulteration of food and medicine is the best and most complete yet passed;" and concludes as follows: "In the near future, laws defining and limiting the responsibility of druggists (wholesale and retail) in cases of error in putting up medicinal agents and prescriptions, should be demanded; and, in the not distant future, the public will demand some legal safeguards and restrictions in the matter of worthless and injurious so-called patent medicines."

The officers for the ensuing year are: President, J. S. Burdsal, of Cincinnati; Viee Presidents—A. A. Miller, St. Louis; John R. Drake, Milwaukee; M. C. Williams, Detroit; Charles West, Toledo; R. A. Robinson, Louisville; Treasurer, S. M. Long, Cleveland; Secretarp, A. B. Merriam, Cincinnati.

A paper on the adulteration of drugs, by Mr. F. Stearns, was read, and, after the appointment of the standing committees, the Association finally adjourned to meet next year in Cleveland, O.

EDITORIAL DEPARTMENT.

CORRECTIONS.—We have received a letter from Mr. John Eliot Howard directing our attention to page 537 of our October number, and continuing as follows:

"In this page you follow apparently some English report of the paper read for me at the British Pharmaceutical Conference. I was not present at the meeting, and the reporter makes me say exactly the opposite of my opinion. I do *not* adopt Prof. Karsten's views, and I never before met with the word *Cincinchona!* In the genus Cinchona the capsules are dehiscent from the base towards the apex, in Karsten's sec. Heterasca they are *variously* dehiscent. You will see in the 'Pharmaceutical Journal' of this country a correct publication of my views, and I shall be grateful for you doing me the justice of setting me right with your readers."

Our report was taken from the "Pharmaceutical Journal" of Sept. 3. We shall, with pleasure, reproduce Mr. Howard's interesting and instructive paper in our next number.

Mr. H. S. Wellcome has likewise informed us that his remarks made at

that meeting had not been correctly reported (p. 539), and has sent the following, which gives the statements made by him in full:

"Mr. Wellcome said that it had been clearly shown that the percentages of alkaloid in *Cinchona succirubra* would differ very greatly according to the conditions under which it was grown. This was also true of other valuable varieties of the cinchonas, for when grown at low altitudes, or under other unfavorable conditions, the percentage of quinia was smaller and the proportion of lower alkaloids was likewise liable to variation. He did not think any one variety of bark could be justly adopted as an officinal standard. The quills which had been referred to last should certainly not, because there was no one variety which was more frequently intermixed with inferior grades, which were very difficult to distinguish except by assay. It would seem that the best officinal standard that could be adopted would be any bark yielding upon assay a certain fixed percentage of total alkaloids, of which a certain fixed percentage should be quinia. The value of the lower alkaloids—particularly cinchonidia—had been more fully appreciated in India and America than in England. In reference to the new bark, *Cinchona cuprea*, mentioned at the Conference last year, some light had been thrown upon it by the reports of Dr. Robbins, of New York, who had recently returned from a visit to the Columbian forests. This *Cinchona cuprea* seems to be an exception to the general rule, not only in its appearance and structure, but also in the fact that, although it is grown at low altitudes, it is a valuable quinia bark, yielding about 2 per cent. of quinia. It is reported that this bark yields little or none of the lower alkaloids. With reference to the fluid extract of cinchona of the United States Pharmacopœia, he might say that in the experience of American pharmacists it had proved very unsatisfactory. It precipitated very freely and was not generally in favor—the compound tincture being the preparation more generally used. With regard to the process suggested by Dr. de Vrij last year, he did not know how far it had been successful, but it would be interesting to have some information upon the subject from those who had given it a practical test."

Female Students in Pharmacy.—The application of several ladies for admission to the lectures has recently brought this subject before the Board of Trustees of the St. Louis College of Pharmacy, and was very properly decided in favor of the applicants. At each course, for the past six or seven years, one or more ladies have been regular attendants and attentive students at the Philadelphia College of Pharmacy, and at present three ladies are attending. Twenty years ago the New York College of Pharmacy had a female student, perhaps the first one that ever attended a college of pharmacy in this country, the lady graduating in 1863.

There can be no doubt that the lectures as delivered, with the special object in view of instructing students in pharmacy, are calculated to impart much useful information to others who do not propose following pharmacy as a business pursuit; more particularly would this be the case with medical students, male as well as female; and we believe that the attendance of such special students should be encouraged. Thus far we have found nearly every one of the lady students to show commendable zeal and attention; and, while we do not feel inclined to urge either male or female to embrace pharmacy as a life pursuit, we believe that those who have made the choice are, without regard to sex or other conditions, entitled to all advantages in the acquisition of knowledge and in the special training that are afforded by our institutions of pharmaceutical learning.

PHARMACEUTICAL LEGISLATION IN GEORGIA.—On September 29th a Pharmacy Act received the Governor's approval in the State of Georgia. The Board of Pharmaceutic Examiners is appointed by the Governor and consists of five experienced druggists or practical pharmacists who have been engaged in the drug business for at least three years immediately preceding their appointment. Licenses are granted by the Board to graduates of colleges acknowledged by the American Pharmaceutical Association, to pharmacists who have obtained a *diploma* from an authorized foreign college or institution or examining board, to graduates of a regular medical college, to druggists having been engaged in the drug business for the next preceding ten years, to druggists who have attended one course of lectures in a college of pharmacy and have been in the drug business for at least nine years, and to druggists who—after three years' experience in a drug store kept by a licensed pharmacist—have passed a satisfactory examination before the Board. The fee for examination and license is $15, and in the case of failure another examination is to be granted after six months without additional fee. All druggists and pharmacists are required to register in the office of the Ordinary of the county wherein the business is conducted, the registration fee being 50 cents. Exempt from the operations of this law are druggists legally licensed by existing laws, physicians putting up their own prescriptions, merchants selling family medicines not poison, and assistants in drug stores kept by licensed apothecaries. The penalty for violation of this Act is a fine of not over $100 and an imprisonment not to exceed three months, either or both, at the discretion of the *Board*.

The Board consists of Edward Barry, of Augusta, chairman; John Ingalls, of Macon; J. S. Pemberton, of Atlanta; O. W. Butler, of Savannah, and Isidor Zacharias, of Columbus, secretary.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Zoological Atlas (including Comparative Anatomy) with Practical Directions and Explanatory Text. For the use of Students. By D. McAlpine, F.C.S., Lecturer on Biology and Natural History, etc. Edinburgh and London: W. & A. K. Johnston. 1881. Folio.

This work consists of two volumes—one devoted to the vertebrata, containing 231 colored figures and diagrams, upon 24 plates; the other treating of the invertebrata, and giving upon 16 plates 249 colored figures and diagrams. Four plates of the latter are devoted to the curious forms of the protozoa, and, commencing with the non-nucleated monera (protamœba, vampyrella, etc.), illustrate the various types of these lowest forms of animal life, closing with the infusoria. The remaining plates illustrate the echinodermata (starfish and sea-urchin), vermes (tapeworm, leech, etc.), anthropoda (crab, spider, scorpion, cockroach, etc.) and mollusca (clam, scallop, slug, limpet, squid, sepia, etc.)

The different classes of the vertebrates are represented by the skate, cod, salamander, tortoise, pigeon and rabbit, the illustrations showing the external characters, internal organs, skeleton, nervous system, sense-organs, urino-genital organs and the organs of alimentation, circulation and respiration.

The two volumes, it will be observed, cover the entire range of the natural groups of the animal kingdom by judiciously selected species. Wherever it was found desirable, brief directions have been given to aid the student in dissecting, and of a number of the lower forms of animals the principal stages of development are given, and the life history is illustrated by diagram. As far as we are able to judge, the illustrations are correct and clear; they are undoubtedly very instructive, and must prove to be a most valuable assistance to the student of zoology and comparative anatomy. It is universally recognized that in the study of natural history a thorough acquaintance with the external characters and with the internal structure is absolutely necessary. A knowledge of the former is acquired by attentive observation and judicious comparison. But to acquire a knowledge of the internal structure, the practical labor of dissecting and isolating the different tissues and framework is of far greater value than the mere examination of dissected specimens or of carefully executed plates; the object of both these aids should be to assist in practical labor, and this aim is well fulfilled in the work before us, in the judicious selections, correct drawings, careful coloring, explanatory descriptions, and in the attractive mechanical execution of the zoological atlas.

A Treatise on Food and Dietetics Physiologically and Therapeutically Considered. By F. W. Pavy, M.D., F.R.S., etc. Second edition. New York: Wm. Wood & Co. 1881. 8vo, pp. 402.

The first edition of this work was noticed by us in 1874 (this journal, 1874, p. 400), and favorably commented upon. The second edition has been revised and modified so as to render the meaning of certain statements clearer, and a considerable amount of new matter has been added; it is now issued as the tenth volume of Wood's library of standard medical authors.

Die Pflanzenstoffe in chemischer, physiologischer, pharmacologischer und toxikologischer Hinsicht. Für Aerzte, Apotheker, Chemiker und Pharmokologen bearbeitet von Dr. Aug. Husemann, weil. Professor der Chemie in Chur, Dr. A. Hilger, o. ö. Professor an der Universität Erlangen, und Dr. Theod. Husemann, Professor der Medicin an der Universität Göttingen. Zweite völlig umgearbeitete Auflage. Berlin: Julius Springer. 1882.

The Vegetable Compounds in their Chemical, Physiological, Pharmacological and Toxicological Relations. For Physicians, Apothecaries, Chemists and Pharmacologists.

We have noticed the appearance of the first edition of this work in "Amer. Jour. Phar.," 1870, p. 315. Of the second edition, which will embrace two volumes, the first part, comprising 320 pages, has been issued and is now before us. It gives evidence that the work has been entirely

recast, and may in point of fact be looked upon as an entirely new work. One of the original authors, Dr. Aug. Husemann, died in 1877, and in his place Prof. Hilger has revised and rewritten the chemical portion of the work. The part before us opens with a chapter on the chemical changes in the vegetable organism and the production of organic compounds, on the chemical characteristic and on the action and application of the proximate vegetable principles.

The second division is devoted to the consideration of the different proximate principles, and is divided into principles of general occurrence in plants and into principles which are found only in a limited number. The former treats of the inorganic constituents, carbohydrates including pectin compounds and derivatives, organic acids (mainly the fatty and fruit acids), proteids, unorganized ferments (like emulsin, myrosin, diastase, papaïn, etc.), coloring matters and amido-compounds (asparagin, leucin, etc.)

In the first edition the proximate principles were grouped together according to their chemical relation. In the present work they are considered in connection with their production from certain plants or groups of plants; hence the arrangement is from a botanical standpoint, and the work is thereby calculated to fill incidentally also the long-felt want of a phytochemistry. From a purely physiological and therapeutical standpoint, this arrangement has likewise obvious advantages. As far as the work has been issued only a portion of the cryptogams are treated, namely the Algæ, fungi and lichens, among which plants but few are found possessing medicinal importance, the most important ones being the mucilaginous algæ, ergot, white agaric and Iceland moss. The various principles are described according to their chemical nature, including tests for recognition and detection, and according to their physiological action. The literature appears to be fully given, and, while it has been found necessary to condense many statements, clearness and comprehensiveness do not suffer. We trust that the remaining parts of the work, in which the most important drugs will have to be considered, will be equally full and reliable.

Congrès Pharmaceutique International, réuni à Londres en 1881. Rapport de M. le Professeur Nt. Gille. Bruxelles.

Compte rendu du Congrès International Pharmaceutique de Londres, en 1881. Par M. Ch. Patrouillard, de Gisors. Paris.

Cinquième Session du Congrès International des Associations et Sociétés des Pharmaciens. Rapport de M. Nicklès. Strasbourg.

The above pamphlets contain the reports of the delegates named on the transactions of the International Pharmaceutical Congress, of which a full account will be found on pp. 523 to 528 of our August number.

Sur l'Ammi Visnaga. Thèse par Théodore Malosse. Montpellier, 1881.

The fruit of Ammi Visnaga, *Lambert*, which plant is known in France as *herbe aux cure-dents* was, in 1878, examined by Ibrahim Mustapha, who isolated a crystalline glucoside, which he named *kellin*, from the

Arabian name *kell*, and which he found to possess emetic and narcotic properties. The author has continued the researches and obtained 2 per cent. of a brownish oily acrid principle, *visnagol*, which is soluble in alcohol and ether, not volatile, and possesses a toxic action. Three crystalline principles, provisionally named *visnagin* α, β and γ, of which the two former are neutral to test paper, but from their aqueous solution are precipitated by the reagents for alkaloids; when heated with water, visnagin β melts near 60°C. to an oily liquid, and dissolves on prolonged boiling. Visnagin γ is insoluble in ether and benzin, and is precipitated from the aqueous solution by potassa, soda and their carbonates, but not by other reagents for alkaloids.

A fixed oil, 16·5 per cent., was found to melt at 17°C., and to yield, on saponification, an acid, called ammistearic acid, having the elementary composition of stearic acid, but differing from the latter in density, fusibility and solubility.

The other constituents obtained from the fruit were soluble albuminoids 1·8, insoluble albuminoids 20·9, glucose 2·9, amylaceous matter 5·0, tissues 6·4, extractive, coloring matter, etc., 34·5, moisture 6·6 and ash 9·1 per cent.

The essay is accompanied by well-executed plates of the fruit and sections of the same, and by sphygmographic delineations, obtained under the influence of visnagol.

The Physician's Visiting List for 1882. Thirty-first year of its publication. Philadelphia: Lindsay & Blakiston.

Die Naturgeschichte des Cajus Plinius Secundus. Leipzig: Gressner & Schramm, 1881.

The Natural History of Cajus Plinius Secundus.

Part 7 of Dr. Wittstein's translation has appeared and contains the books on the grape vine, on fruit trees and on forest trees.

First Annual Report of the Astronomer in Charge of the Horological and Thermometric Bureaus of the Winchester Observatory of Yale College. 1880–1881. By Leonard Waldo.

Annual Reports of the Board of Visitors to the Legislature, and of the Trustees, Superintendent, Treasurer and Financial Agent of the New Hampshire Asylum for the Insane to the Governor and Council. June, 1881.

The Galvanic Accumulator for Storing Dynamical Electricity for Cautery and Illuminating Purposes. By Louis Elsberg, A.M., M.D. From the "Transactions of the New York Academy of Medicine."

How to Use the Bromides. By George M. Beard, A.M., M.D. From the "Journal of Nervous and Mental Diseases," Vol. VIII.

A Manual of Organic Materia Medica; being a Guide to Materia Medica of the Animal and Vegetable Kingdoms, for the use of Students, Druggists, Pharmacists and Physicians. By John M. Maisch. Philadelphia: Hewey C. Lea's Sons & Co.

This work will be issued in a few days. In our next number a more extended notice of it will be given.

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